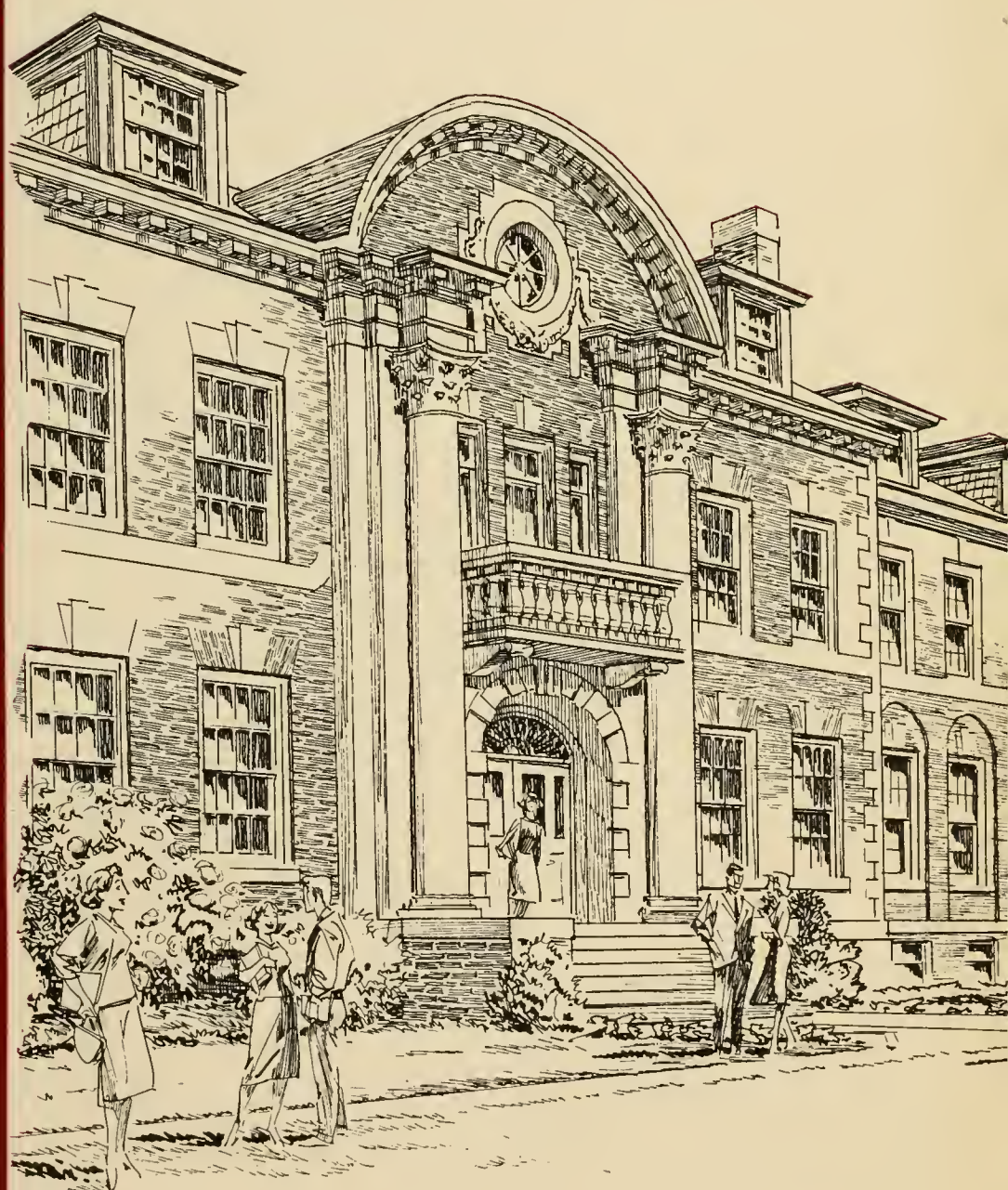


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NEW HAVEN COLLEGE



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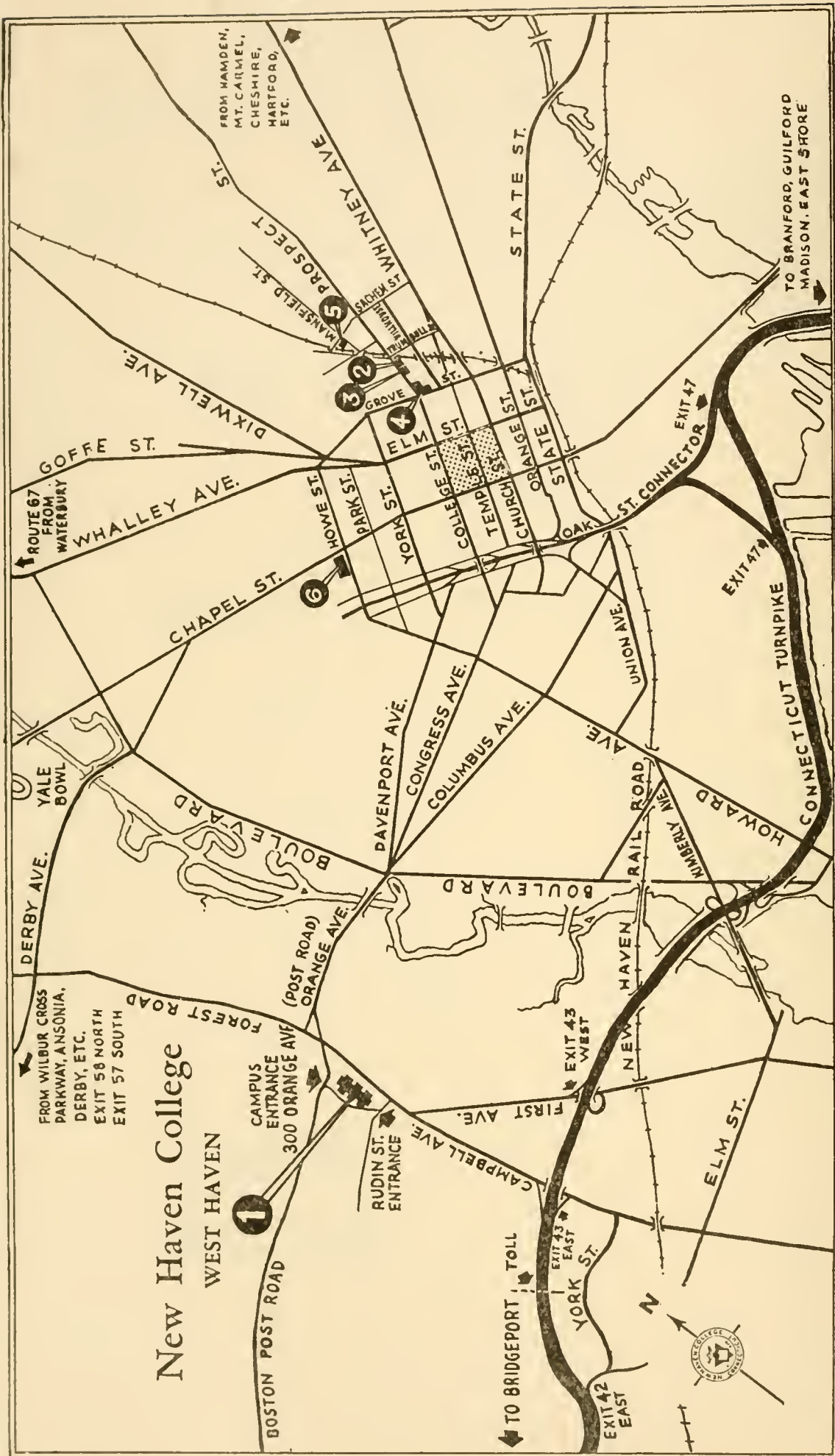
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*NEW HAVEN
COLLEGE*

*300 ORANGE AVENUE
WEST HAVEN, CONNECTICUT*

**Catalog
1962-1963**



NEW HAVEN COLLEGE, West Haven and New Haven Locations

1. Main Campus, 300 Orange Avenue, West Haven
2. Engineering Mechanics (EM), 51 Prospect Street, New Haven
3. North Sheffield (NS), 45 Prospect St., N. H.
4. Strathcona Hall (Sheffield) (S), corner of Grove and Prospect Streets, N. H.
5. Hammond Laboratory (H), 14 Mansfield St., N. H.
6. YMCA, 52 Howe Street, N. H.

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Assistant Professor in Business Administration

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The purpose of the Engineering Advisory Council is to act in an advisory and consultative capacity to the Engineering Department of the College.

- | | |
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New Haven College



History

New Haven College was founded by the Y.M.C.A. of New Haven in 1920 as a branch of Northeastern University. As an independent, coeducational college, it has, at all times, sought to serve the community.

By act of the Connecticut General Assembly, the College was incorporated in 1926 and was authorized to grant the Associate in Science degree. At the same time, it negotiated an agreement with Yale University for the use of its classrooms and laboratories for the operation of an evening college.

During the years which followed, the College, in cooperation with local businesses and industries, developed and conducted a systematic educational program.

From 1941 to 1945, the College administered the official Yale University Engineering, Science, Management War Training Program for New Haven County. Accreditation by the New England Association of Colleges and Secondary Schools in 1948 marked another significant step forward.

The next decade saw the inauguration of the Division of Special Studies, The School of Executive Development, and the Reading Center. During this period two daytime programs for recent high school graduates were also begun: the Cooperative Plan, in which students alternate terms of work and study, and the Engineering Program. Since 1958 the College has been authorized by the Connecticut General Assembly to offer courses of study leading to the Bachelor of Science degree to both day and evening students.

The acquisition of the present campus in 1960 provided the opportunity for the College to expand its offerings for full-time students and to develop further its other credit and non-credit curricula. The first major addition was the Arts & Science Program in the Day Division.

In March, 1962, the College acquired 28 acres of undeveloped land three blocks north of the present campus for planned future use.

Service to the individual student, whether of the usual college age or older, and to business, industry, and institutions of the New Haven area is the primary function of New Haven College. This philosophy will be the controlling factor in all the plans for the future.

NEW HAVEN COLLEGE

General Information

New Haven College, 1962-1963

New Haven College



Divisions of the College

New Haven College has seven divisions, each of which serves a special function. They are: The Engineering Program, The Cooperative Plan, The Arts & Science Program, The Evening Credit Program, The Division of Special Studies, The School of Executive Development, and the Reading Center.

Detailed information about the credit programs is available on the subsequent pages of this catalog. For purposes of ready identification, a brief description of each follows.

The Credit Programs

The Engineering Program is a co-educational program offering a four-year engineering program. It provides an opportunity for those students interested in engineering, mathematics or science to pursue their college program while residing at home. Students completing the first two years receive the Associate in Science Degree in Engineering. Those completing the third and fourth years receive the Bachelor of Science in Engineering. A student may elect the general Industrial Engineering Program or the Electrical Engineering Program.

The Cooperative Plan intended for recent high school graduates, alternates periods of full-time studies with periods of employment in business and industry. Students taking this program may earn the Associate in Science degree or the Bachelor of Science degree in Industrial Administration or Industrial Management.

The Arts & Science Program offers a two-year college curriculum leading to an Associate in Science degree. Although primarily a terminal program, most courses are transferable, should the student wish to go on for a bachelor's degree. This program offers a choice of majors to give the students a degree of concentration in fields in which there will be increased employment opportunities, for both men and women, throughout the nation. The five majors offered in this program are: Commercial and Advertising Art, General Studies, Journalism and Public Relations, Laboratory Techniques, and Office and Personnel Management.

The Evening Credit Program is the evening degree-granting division of the College and consists of the Upper Division which confers the bachelor degree, and the Junior College which offers the associate degree programs.

The Division of Special Studies

This Division offers a series of special courses in the fields of engineering, business and general areas. Usually students taking these courses do not receive academic credits. The courses generally are designed to provide supplemental knowledge and skills needed in specialized jobs in business and industry. Further information about this Division may be obtained by requesting separate bulletins from the College.

The School of Executive Development

This four-year program for middle-level executives consists of advanced studies in the field of management, with emphasis placed on the development of the student's breadth and understanding outside the area of his or her specialization. The School is guided by a group of senior executives of New Haven area businesses and industries, and its enrollment is limited to individuals designated by their respective companies and approved by the College. This program is offered in the late afternoon hours. Additional information about this program may be obtained from the College upon request.

The Reading Center

Of great significance is the fact that a large number of elementary, secondary, and college students are seriously deficient in many aspects of reading. This deficiency is equally significant in the adult world where the demands of an increasingly complex society require a greater amount of reading.

It is the aim of the New Haven College Reading Center to offer a varied program of reading techniques and study skills to fit the specific needs of students and adults. The program is designed for classroom group teaching techniques on the elementary, secondary, college and adult levels. The program includes small group and individual tutoring for students of all age and accomplishment levels. In-plant management training programs can be arranged. Additional information about this program may be obtained from the College upon request.

Admission

Since each division of the College has its own admission requirements, these requirements are defined in detail in subsequent pages of this catalog.

In general, graduates of accredited secondary high schools are eligible for admission. However, in special cases persons who have not completed their high school education may be admitted to the various divisions of New Haven College by meeting certain specified conditions.

In the case of adults, the College is interested in evidence of maturity as well as in formal education as prerequisites for admission.

Accreditations and Memberships

New Haven College is a co-educational, non-sectarian, independent institution of higher learning chartered by the Legislature of the State of Connecticut, accredited by the Connecticut State Department of Education as a junior and senior college. The College holds membership in The New England Association of Colleges and Secondary Schools, The American Association of Junior Colleges, The Connecticut Council on Higher Education, The Connecticut Conference of Community and Junior Colleges, The American Council on Education, and The New England Junior College Council.

Transferability of Credit

In accordance with the usual practice among institutions of higher learning, transfer of credit from this College to another institution will be determined by the other institution in terms of the achievement and promise of the individual seeking transfer. The institution to which transfer is being made will also evaluate specific courses in terms of their length and content in relation to its specific requirements. New Haven College is an accredited institution and its credits will be given consideration by the major institutions of the country in terms of the conditions outlined above.

Student Personnel Services

In the interest of assisting each student to achieve his fullest development as a person and of helping him to utilize most effectively the instruction offered, the College makes available to all students a variety of services and information which are his for the asking, including: counseling and guidance, testing, job placement, loans and scholarships, and student activities.

Counseling and Guidance — Members of the administrative staff of the College reserve many hours for counseling with students. Students need only to request an appointment in order to seek information and help. By inquiring at the office, a student may learn who is most qualified to discuss his problem with him. Counseling and guidance is offered in such areas as program planning; study habits and methods; personal, marital or domestic problems; vocational selection and choice; job adjustment; relationship with Veterans Administration, the military establishments and Selective Service; and others.

Placement Service — The College receives requests from both students and employers for job placement services. Although the College does not conceive its function to be that of a public employment service, it is interested in and prepared to render placement service within the limitations of its purposes and resources. It acts as a medium of exchange of information between students and former students who desire placement, and employers seeking personnel. It is particularly interested in helping students find positions which require college study or which lead to positions that require such education, and in assisting students to find employment related to their program of studies.

A student or former student of the College who desires placement should call at the office for a placement application form and at that time will receive specific information as to whom he is to contact in regard to his placement problem.

A company wishing to use the placement facilities of the College should list the job and the desired qualifications in the form of a letter. A member of the College staff will then contact the company to discuss procedure and possibilities of filling the position.

Testing — Counselors, upon request, will report and interpret to students the results of their entrance tests.

Alumni Association

Eligibility for membership in the Alumni Association is acquired immediately upon graduation from either the associate or bachelor programs. One of the staff officers of the College serves as Alumni Secretary. An Executive Committee conducts the affairs of the association during the periods between annual meetings and also serves as a planning group. There is a standing committee on annual giving.

In addition to the annual meeting, other meetings of social and educational interest occur during the year.

The Alumni Association is represented on the Board of Governors by the election of a member to the Board for a term of two years. The president of the Association serves on the Board of Governors as an ex-officio member.

The Association awards scholarships to qualified students.

Scholastic Regulations

Grading System — The following grading system is in use, and except where otherwise specified, applies both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor.

A Superior

B Good

C Fair

D Lowest passing grade

F Failure

Inc. Incomplete. Indicates that some work remains to be completed. Such work must be made up promptly in order to remove the "incomplete." Otherwise, the "Inc." remains on the student's record, no credit is given for the course and it must be repeated before further work for which it is prerequisite may be taken.

WD Withdrawal. Indicates either: (1) Withdrawal prior to midpoint of semester, or (2) withdrawal after midpoint of semester and work satisfactory at that time.

WF Indicates withdrawal after midpoint of semester with unsatisfactory work.

S Satisfactory. Given only in non-credit courses.

U Unsatisfactory. Given only in non-credit courses.

Grade Reports — Reports of the final grade in each subject will be mailed to the student soon after the close of each semester. The same report will be mailed to employers in those instances where the student has given his approval. Reports will be mailed to parents or guardians of all students under 21.

Academic Standards — The academic standing of each student will be determined on the basis of his quality point ratio each semester.

The quality point ratios required to be in good academic standing are as follows:

During each semester of enrollment in the College, a quality point ratio of 1.5 is required.

Failure to earn the required quality point ratio in any semester will place a student on academic probation for the following semester of enrollment.

Attention is called to the fact that the minimum quality point ratio of 1.5 which is required to remain in good academic standing from semester to semester is insufficient to meet the graduation requirement of a total quality point ratio of 2.0. Therefore, the fact that a student may never have been on probation is no guarantee that he will meet graduation requirements.

In order to determine quality point ratios, each letter grade is assigned a quality point value:

A	4 quality points
B	3 quality points
C	2 quality points
D	1 quality point
F	0 quality points
WF	0 quality points

The quality point ratio for all credit students is obtained by multiplying the quality point value of each grade by the number of semester hours of the course, then dividing the total quality points by the total semester hours.

Removal of Probation or Dismissal for Academic Deficiency—

1. A student who has twice been on probation will be dismissed from the division of the College in which he is enrolled the next time his quality point ratio for any semester falls below the required minimum.

2. A student whose quality point ratio in any one semester is less than 1.0 will be dismissed from the College.

Readmission — Applications for readmission after a student has been dismissed, and application for admission following dismissal from another college, will be considered only after the lapse of a semester and only when the student provides evidence which indicates his probable success if readmitted.

Requests for readmission should be submitted in writing to the Dean at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he may succeed if readmitted.

Readmission does not automatically follow; each application is decided individually by the Committee on Academic Standing.

Dean's List — Full-time students who earn a quality point ratio of 3.2, or better, in any one semester will be placed on the Dean's List.

All part-time students who have accumulated a minimum of 14 semester hours at the College will automatically be considered for the Dean's List at the end of each semester. A cumulative Quality Point Ratio of 3.2 or better is required.

Attendance Regulations

Evening Credit Program — A student is automatically dropped when his absences exceed three per semester for a 3-or-4-semester-hour course.

Daytime Credit Programs — Classes are operated on the policy that it is necessary for all students to attend all class meetings. If a class is missed, the benefits from participation in the class discussion and instruction are completely lost. No student, regardless of ability, can afford that loss. Upperclassmen in good standing and honor students are afforded some “free-cut” privileges. The Student Handbook outlines provisions for this and for cases of illness, emergency, and excessive absences.

Requirements for the Degrees

The Associate and Bachelor degrees will be conferred at Commencement when the student has met *all* the requirements of his program and:

1. Has earned a cumulative quality point ratio of at least 2.0;
2. Has been recommended by the faculty;
3. Has met all financial obligations.

Core Requirements for all Bachelor Programs

All candidates for a Bachelor of Science Degree from New Haven College are required to have credits selected from the following subject areas:

ENGLISH & HUMANITIES	14 S.H.
Composition I (required of all students)	3
Speech (required of all students)	2
Humanities (required of all students)	6
or	
Literature (may be substituted for 3 s.h. of Humanities)	3
Technical Report Writing or Comp. and Report Writing	3
SOCIAL STUDIES	12 S.H.
Sociology	6
Political Science	6
Economic History of U. S. (required of all students)	3
Economics (required of all students)	3
SCIENCES AND MATHEMATICS	9 S.H.
Physics	6-8
Science	6
Chemistry	8
Biology	3
Mathematics (3 s.h. of Math. required of all students)	3
PHILOSOPHY—PSYCHOLOGY	6 S.H.
Psychology, Intro.	3
Philosophy, Intro.	3
TOTAL 41 S.H.	

Associate in Science Degree with Honors

A degree *With Honors* is awarded to students who have a quality point ratio of 3.25 for the semester hours specifically required for the degree program from which they are being graduated, and who have taken all the required work at this College.

Transfer students will be awarded honors on the same basis, provided however, that their total average will be considered only when they have an honor average for studies completed at this College.

A degree *With High Honors* is awarded to students who have a quality point ratio of 3.50 based on the same considerations as noted above.

In determining eligibility for degrees with honors, credits earned by crediting examinations and electives in excess of those required will not be considered.

Bachelor of Science Degree with Honors

Honors may be conferred upon candidates for graduation who have completed at least 60 semester hours of work at New Haven College in their junior and senior years. The following standards shall be used:

1. The Bachelor's degree *Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.25 at the end of the first semester of his senior year and who continues to attain the same standard for the remainder of the year.

2. The Bachelor's degree *Magna Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.50 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality-point ratio in all courses counting toward his major is at least 3.50, and who has completed all the suggested courses within his curriculum.

3. The Bachelor's degree *Summa Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.70 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.70, and who has completed all the suggested courses within his curriculum.

Transfer Students — Students who have been granted advanced standing for credits earned at another college are required to earn at New Haven College a minimum of eighteen semester hours, twelve of which are in his major, for the Associate in Science degree, and a minimum of thirty semester hours, fifteen of which are in his major, for the Bachelor of Science degree.

Crediting Examinations

The Crediting Examination provides means whereby credit may be established for a course by examination. It is the policy of the College that no student shall be required to take courses which he does not need because of previous experience or education. Since his previous experience or education may have been with a non-accredited institution or agency, or with the armed forces, it is difficult to determine the amount of credit which he should receive toward a New Haven College degree. Therefore, a student may meet course prerequisites and/or establish credit in specific courses by passing successfully a Crediting Examination in each of the courses in which he feels qualified.

Students desiring to undertake a Crediting Examination should first discuss the matter with the Dean. If it is agreed that the examination is feasible, an application accompanied by a fee of ten dollars should be submitted. The examination is then arranged.

A Crediting Examination normally will consist of a three- to four-hour written and a one-hour oral examination.

At least one year's successful study must be completed at the College before credit awarded by examination will be granted officially.

The Cooperative Plan

Director: William C. Dimick



Aims and Objectives

The College realizes that work experience is a vital part of the learning experience, and provides in its program an opportunity for the student to explore various job situations. When a student is put into a work situation, he acquires knowledge that will supplement and complement his classroom learning. There is also the maturing influence of the opportunity to work with working people. As yet, there is no classroom substitute for the practical knowledge derived from experiences of the day-to-day problems on the job. The experience gained from the cooperative jobs—doing different types of work and discovering the working conditions on these jobs—assists the student in choosing a field for his life's work.

Through the experience of the College in coordinating the work and study of student-employees in its evening credit program, it recognizes the desirability of developing young men and women who will enter business or industry with more than narrow technical skills. Many companies are looking for future leaders with a background broad enough to prepare them to cope with the increasingly complex economic and social problems of business today. The Cooperative Plan of studies is designed to meet this need and to provide the technical education necessary for entry jobs in business and industry.

Length of Program

The Cooperative Plan of the College is planned to provide either a two-year or a five-year program. Some young men or women may desire to spend their first two years of college at home and then proceed to another college.

In the two-year program, provision is made for students to receive their Associate in Science degree and continue in the Day or Evening Credit Division of New Haven College.

It is a plan offering periods of study and work through two or five years. The operation of the Cooperative Plan provides that half of the student body is in college studying at one time, while the other half is on a cooperative job in business or industry, including summers.

In the freshman class, all students are required to attend classes full time from September to June. Success in the basic freshman courses of the major field of study has an important bearing on further study in the Cooperative Plan. The upperclassman alternates study and work periods.

The Study Period

During the study period, classes are held in the buildings on the West Haven campus. In order to permit as much freedom as possible in planning their programs, students may select technical courses in the evenings, from

courses in business, engineering, and management. The evening courses meet from 7:00 to 9:45 p.m. generally at the main campus. Some evening classes are conducted off campus.

It should be noted that evening courses meet continuously from September through June regardless of whether the cooperative period is a study or work period.

The Work Period

Work Schedule — On the job, the work week will be determined by the individual company. Students are expected to conform to the same rules and regulations as the regular employees.

Cooperative Work Record — At the end of each work period the co-operating company furnishes a written evaluation of the student's performance on the job. This is used as an aid in future job placement and in counseling the student.

Admission Requirements

Because of the unique nature of the Cooperative Plan, its admission requirements differ in certain respects from those listed elsewhere in the catalog. An applicant for the Cooperative Plan:

1. Must be a high school graduate or have earned a state high school diploma;
2. Must not have attended full-time college for more than one year prior to applying for the Cooperative Plan for an Associate in Science Degree, or more than two years in applying for a Bachelor of Science Degree;
3. Must meet the standards of the College in respect to high school average;
4. Must meet the standards of the College in respect to admission examinations;
5. Must be physically fit for undertaking both employment and study.

The College prescribes no set pattern of high school subjects as entrance requirements for this plan.

An applicant for the Cooperative Plan should be a graduate of a secondary school of approved standing and should present 15 acceptable units of secondary school work.

In general the applicant may be admitted on the basis of his secondary school record when it shows an average grade of "C" or better, when the secondary school subjects bear a reasonable relationship to the courses to be taken at the College, and when the applicant is recommended by his secondary school.

Securing Cooperative Employment

Placement of students in Cooperative work is accomplished through the joint efforts of the student and the College. In most cases the College will be able to refer the student to companies interested in employing Co-op students. When this is done, the employer will be notified and the student will receive information for making initial interview arrangements.

The student is expected to report the results of the interview immediately to the Director of the Cooperative Plan. The referral does not mean that employment is secured or guaranteed by the College.

All Co-op students are expected to actively and earnestly seek employment through their own resources as well as those of the College. When a student locates a job in a company not already recognized by the College for Cooperative employment, the College reserves the right to approve the placement.

Cooperative Employment Rules

A Cooperative job involves a four-way relationship among the employer, the student, his alternate, and the College. Because the interests of other students, present and future, are often at stake, careful observance of the following rules is expected:

1. Cooperative students are required to obey all rules and regulations of the company for which they work and are subject to all labor conditions, including those pertaining to liability for accidents.
2. After placement has been made, students at school or work are not permitted to change groups, or leave their jobs without permission from the Director of the Cooperative Plan.
3. Any serious misunderstanding, lay-off, or other employment or labor difficulty must be reported immediately to the Director of the Cooperative Plan.
4. In case of sickness or other emergency requiring absence from work, the employer must be notified immediately. Should it appear that the absence will continue more than a day or two, the Director of the Cooperative Plan should also be notified.
5. A student abandoning a job or so conducting himself on the job as to cause his discharge will be subject to suspension from the College for breach of discipline.
6. It is the opinion of the College that any student securing employment through the College or with the approval of the College shall not apply or receive Unemployment Compensation under the Cooperative Plan. Any student doing so, may be subject to dismissal from the College. Any student receiving or applying for Unemployment Compensation after graduation, as a result of his cooperative work, shall have this noted in his permanent record.

The Summer Sessions of the Day and Evening Credit Divisions

Director: IRWIN SIEGEL



The College offers summer sessions with these primary functions:

1. To offer opportunity for summer study to those residents of the New Haven area who attend other schools during the regular school year. For financial reasons, most of these students find it desirable to live at home and work during the summer. The summer program of the College is offered in both the Day and Evening Divisions. Reasons for summer study vary, but are generally confined to the following:
 - a. To make up deficiencies.
 - b. To satisfy prerequisites for courses in the parent institution.
 - c. To acquire advanced standing in the parent school.

Experience has shown that the credits earned at the College are acceptable to parent institutions. The College is a member of the New England Association of Colleges and Secondary Schools. For additional assurance of the acceptance of credit by the parent school, prior approval by that school is advisable.

2. To provide opportunity for summer study to the students of the College. Reasons for summer study for this group of students may be described as follows:
 - a. To lighten the study load during the regular school year, but still meet the yearly requirements of his program.
 - b. To shorten the normal time required for a degree.
 - c. To take preparatory work.
 - d. To make up deficiencies caused by failure in certain courses.
 - e. To take additional work beyond the degree requirements and yet complete a program within the normal time.
 - f. To fulfill the schedule requirements of the Cooperative Plan of study.

NOTE: The accomplishment of any one of the six objectives listed above will depend on the specific subjects offered during any summer session.

Registration — For all new students a personal interview with a staff member of the College is necessary. Registration procedures will be explained at this time. For those new students who desire work for credit in other institutions, prior approval should be obtained from those institutions (see 1 above). This procedure should be followed each semester regardless of previous attendance.

NEW HAVEN COLLEGE

Day Division

OFFERING THE DEGREE ASSOCIATE IN SCIENCE in:

Arts & Science—with Majors in:

General Studies

Commercial and Advertising Art

Journalism and Public Relations

Laboratory Techniques

Office and Personnel Management

*Industrial Administration and
Management*

Engineering

Pre-Engineering

OFFERING THE DEGREE BACHELOR OF SCIENCE in:

Industrial Administration

*Industrial Management—Computer
Option*

Electrical Engineering

Industrial Engineering

New Haven College, 1962-1963

Calendar

THE DAYTIME PROGRAMS

SUMMER SESSION 1962

Placement Examinations:		1962
English examinations	Monday, 7:00 p.m.	June 4
Scholastic Aptitude examination	Tuesday, 7:00 p.m.	June 5
Mathematics examination	Tuesday, 8:15 p.m.	June 5
Registration period	Tuesday, Wednesday	June 12, 13
Tuition due on or before	Wednesday	June 13
Classes begin	Monday	June 18
Independence Day (holiday)	Wednesday	July 4
First Term final examinations	Monday	July 23
Second Term classes begin	Wednesday	July 25
Second Term final examinations	Wednesday	August 29

FALL SEMESTER 1962

Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	August 21
Scholastic Aptitude examination	Thursday, 7:00 p.m.	August 23
Mathematics examination	Thursday, 8:15 p.m.	August 23
Labor Day (holiday)	Monday	September 3
Placement Examinations:		
English examinations	Wednesday, 7:00 p.m.	September 5
Scholastic Aptitude examination	Thursday, 7:00 p.m.	September 6
Mathematics examination	Thursday, 8:15 p.m.	September 6
Registration of first-year students, tuition due	Monday	September 10
Orientation of first-year students	Tuesday	September 11
Registration of upper-class students, tuition due	Tuesday	September 11
Classes begin	Thursday	September 13
Thanksgiving (holiday)	Thursday-Friday	November 22-23
Christmas recess	Friday-Wednesday	December 21-January 2

1963

Classes resume	Thursday	January 3
Last day of classes	Thursday	January 10
Final examinations	Monday-Thursday	January 14-17
Recess	Friday-Sunday	January 18-27

SPRING SEMESTER 1963

Registration, tuition due	Monday	January 28
Classes begin	Tuesday	January 29
Spring recess	Saturday-Sunday	March 16-24
Classes resume	Monday	March 25
Good Friday (holiday)	Friday	April 12
Last day of classes	Wednesday	May 22
Final examinations	Friday-Wednesday	May 24-29
Commencement	Sunday	June 9

SUMMER SESSION 1963

		1963
Placement Examinations:		
English examinations	Monday, 7:00 p.m.	June 3
Scholastic Aptitude examination	Tuesday, 7:00 p.m.	June 4
Mathematics examination	Tuesday, 8:15 p.m.	June 4
Registration period	Tuesday-Wednesday	June 11-12
Tuition due on or before	Wednesday	June 12
Classes begin	Monday	June 17
Independence Day (holiday)	Thursday	July 4
First Term final examinations	Monday	July 22
Second Term classes begin	Wednesday	July 24
Second Term final examinations	Wednesday	August 28

Admission Procedure — Day Division

1. Call the College for information and, if possible, arrange for a pre-application interview. (WEst 4-6321)
2. Complete an application furnished by the Admissions Office which form contains:
 - a. Personal information
 - b. Secondary Education Form—to be mailed to student's high school for completion and for mailing back to New Haven College.
3. An application fee of \$10.00 must accompany the application. This fee is not refundable.
4. All students without college training will take the admission tests including Scholastic Aptitude, Mechanics of English, and Reading Comprehension. Those planning to enroll in engineering or mathematics programs, or to major in Laboratory Techniques, will take also the Mathematics examination.

College Entrance Examination Board results, if satisfactory, are accepted in place of the New Haven College admission examinations.

When all information has been received and the admissions tests completed, or College Entrance Examination Board results have been received and accepted, the applicant will be notified with regard to his admission.

5. When the student has been notified that the conditions for admission have been met, he should mail a tuition deposit of twenty-five dollars (\$25.00) to be credited on his first-term bill. This deposit is a reservation for a place in the class and cannot be refunded if the student fails to enter at the expected time.

Scholastic Regulations

Scholastic regulations, in general, will conform to those for other divisions of the College. For the Grading System in effect, refer to page 17.

College Expenses in the Day Division

\$10.00—Application Fee—payable only once at the initial time of application. Not refundable.

\$25.00—Acceptance Fee—payable when notified of acceptance and credited to first semester tuition. Not refundable.

\$350.00—Tuition per semester—payable at registration. See specific program calendar for payment dates.

Tuition for less than 12 semester hours, or equivalent, is charged at the rate of \$30.00 per semester hour.

\$10.00—Student activity fee per semester—payable with tuition.

\$2.00—Change of registration fee—assessed for the following:

Dropping a course or courses.

Substituting courses.

Requesting assignment to a different section of same course.
Not refundable.

\$5.00—Make-up examination fee—assessed when a student requires an end-of-semester examination at other than the scheduled time except for conflicts caused by the examination schedule. Not refundable.

\$25.00—Graduation fee—Assessed regardless of participation and due one month prior to graduation. Not refundable.

Laboratory and breakage fees—payable each semester for courses requiring such a fee. See Course Descriptions for specific amounts.

Refunds—No refund will be made for withdrawal from, or for reductions in, the study program.

Deferred Payments—In exceptional cases, arrangement for deferred payments may be made through the college business office.

Summer Session

\$5.00—Application fee payable only once. Not refundable.

\$350.00—Tuition for students carrying a full academic program with a maximum of 18 semester hours.

Tuition for less than 14 semester hours, or equivalent, is charged at the rate of \$25.00 per semester hour.

\$1.00—Student activity fee per 3 semester hours.

NEW HAVEN COLLEGE

The Arts & Science Program

OFFERING THE DEGREE OF
ASSOCIATE IN SCIENCE

with majors in:

General Studies

Commercial and Advertising Art

Journalism and Public Relations

Laboratory Techniques

Office and Personnel Management

The Arts & Science Program

Director: STEPHEN J. BENNETT, Chairman, Department of General Studies



Aims and Objectives

The Arts & Science Program offers a two-year college curriculum leading to an Associate in Science degree upon completion. Although primarily a terminal program, most courses will transfer upon completion, should the student wish to continue for a bachelor's degree.

This program offers a choice of majors to give the students a degree of concentration in fields in which we feel there will be more and more employment opportunities, for both men and women, throughout the nation. The five majors offered in this program are: General Studies, Commercial and Advertising Art, Journalism and Public Relations, Laboratory Techniques, and Office and Personnel Management.

General Studies: This major is offered for those students who wish a college degree of a general nature and for those students who have not yet decided upon a field of specialization but who, in the meantime, want to start college work.

Commercial and Advertising Art: This major is offered for both women and men who wish to obtain employment in a vast and challenging field used extensively by all graphic media, i.e., newspapers, magazines, brochures, "house organs", indoor and outdoor advertising displays, etc. In addition, this major is planned to help develop the artistic talent of those students who are interested in art training to be used in other professions.

Journalism and Public Relations: This major is offered for both women and men who wish to obtain employment in the closely related, and ever expanding, fields of journalism and public relations, and for those who wish to use journalistic training in other professions. Students taking this major will have an opportunity to work on the staff of the College newspaper, *The News*.

Laboratory Techniques (For Industry and Research): This major is offered for both women and men who wish to prepare themselves to meet the increasing demand for well-trained laboratory technicians. Such technicians are employed in hundreds of research, engineering, and testing laboratories. They are usually assigned to work with scientists and engineers with advanced training.

The curriculum in this program 1) gives the student a foundation in chemistry, physics, and biology, laying emphasis on the associated laboratory work, 2) instructs the student in mathematics, report writing, and a foreign language, 3) balances the technical training with a well-rounded study of the liberal arts subjects, 4) trains the student in the advanced techniques of the modern laboratory.

Office and Personnel Management: This major is offered for both women and men who wish to prepare for a career in general office management and personnel administration.

Since the art of handling and supervising people, even in small numbers, requires more than a basic business training, the major draws heavily from other disciplines such as Psychology, Humanities, Human Relations.

An understanding of the forces which mold the world we live in, coupled with the ability to judge and communicate ideas, are the essential ingredients which are planned for the student so that he may function well, and advance, in this area.

Admission Requirements

An applicant for the Arts and Science Program:

- 1. Must be a high school graduate of a secondary school of approved standing or have earned a state high school diploma;
- 2. Must meet the standards of the College in respect to high school average, and should present 15 acceptable units of secondary school work;
- 3. Must meet the standards of the College in respect to admission examinations: satisfactory score on CEEB test and/or the admission tests given by the College.

The College prescribes no set pattern of high school subjects as entrance requirements for this program.

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAM

Major in General Studies

FIRST YEAR					
Fall		Sem. Hrs.	Spring		Sem. Hrs.
E 107	Speech	2	E 206	English Comp. & Literature	3
E 113	English Composition	3	EC 202	Econ. History of U.S.	3
EC 133	Economics	3	P 111	Psychology	3
O 111	Orientation	1	PE 112	Physical Ed. II	0
PE 111	Physical Ed. I	0		Foreign Language	
	Foreign Language or			or History	3
	History	3		*Electives	3-6
	*Electives	3-6			
		15-18			15-18
SECOND YEAR					
Fall			Spring		
	Foreign Language or			Foreign Language or	
	History	3		History	3
E 118	Modern Literature	3	Art 131	Modern Art	3
E 201	Humanities	3	E 202	Humanities	3
SS 214	Political Science	3	SS 215	Sociology	3
	Science or Math.	3		Science, Math. or	
	*Elective	3		**Business Finance	3
		15-18		*Elective	3
					15-18

* Students planning for a B.S. degree should elect 8 additional hours of laboratory science.

** Prerequisite—Business Math.

The Student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

Major in Commercial and Advertising Art**FIRST YEAR**

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
Art 101 Drawing & Painting I	3	Art 102 Drawing & Painting II	3
Art 111 Design I	3	Art 112 Design II	3
E 107 Speech	2	E 206 English Composition and Literature	3
E 113 English Composition	3	EC 133 Economics	3
O 111 Orientation	1	PE 112 Physical Ed. II	0
P 111 Psychology	3	Elective	3
PE 111 Physical Ed. I	0	Extra Elective	3
Elective	3		
	15-18		15-18

SECOND YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
Art 211 Lettering	3	Art 122 Layout & Print. Tech.	3
BA 104 Advertising	3	Art 131 Modern Art	3
E 201 Humanities	3	E 202 Humanities	3
SS 214 Political Science	3	SS 215 Sociology	3
Science or Bus. Math.	3	Science or **Bus. Finance ..	3
Elective	3	Elective	3
	15-18		15-18

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

Major in Journalism and Public Relations**FIRST YEAR**

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
E 107 Speech	2	BA 131 Public Relations	3
E 113 English Composition	3	EC 202 Economic History of U. S. ..	3
EC 133 Economics	3	J 201 News Writing & Reporting ..	3
J 101 Journalism	3	P 111 Psychology	3
O 111 Orientation	1	PE 112 Physical Ed. II	0
PE 111 Physical Ed. I	0	Elective	3
Elective	3	Extra Elective	3
Extra Elective	3		
	15-18		15-18

SECOND YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
BA 104 Advertising	3	Art 122 Layout & Printing Techniques	3
E 201 Humanities	3	E 202 Humanities	3
J 301 Advanced Journalism & Feature Writing	3	E 220 Tech. Report Writing	3
SS 214 Political Science	3	SS 215 Sociology	3
Science or Math.	3	Science, Math. or **Business Finance	3
Elective	3	Elective	3
	15-18		15-18

** Prerequisite—Business Math.

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree. The student majoring in Journalism and Public Relations should be able to type.

Major in Laboratory Techniques (Research and Industry)

FIRST YEAR					
<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
CH 101	Gen. Chemistry (with lab)	4	CH 102	Gen. Chemistry (with lab)	4
E 107	Speech	2	E 220	Tech. Report Writing	3
E 113	English Composition	3	EC 133	Economics	3
M 108	General Math I	3	M 109	General Math. II	3
O 111	Orientation	1	PE 112	Physical Education II	0
PE 111	Physical Education I	0	SC 122	Biology (with lab.)	3
SC 121	Biology	3		Elective	3
	Elective	3			
		16-19			16-19

SECOND YEAR					
<i>Fall</i>			<i>Spring</i>		
CH 211	Advanced Lab. Techniques	3	CH 212	Advanced Lab. Techniques	3
E 201	Humanities	3	E 202	Humanities	3
P 111	Psychology	3	EC 202	Econ. Hist. of U.S.	3
PH 201	Gen. Physics (with lab)	3	PH 202	General Physics (with lab)	3
SS 214	Political Science	3	SS 215	Sociology	3
	Elective	3		Elective	3
		15-18			15-18

The student is expected to carry a minimum of 15 credit hours per semester. A total of 62 semester hours is required for the degree.

Major in Office and Personnel Management

FIRST YEAR					
<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
BA 101	Law of Contracts	3	BA 102	Law of Contracts	3
E 107	Speech	2	BA 131	Public Relations	3
E 113	English Composition	3	EC 202	Econ. History of U. S.	3
EC 133	Economics	3	IE 114	Management Survey	3
O 111	Orientation	1	P 111	Psychology	3
PE 111	Physical Education I	0	PE 112	Physical Education II	0
	Elective	3		Elective	3
	Extra Elective	3			
		15-18			15-18

SECOND YEAR					
<i>Fall</i>			<i>Spring</i>		
A 111	Introductory Accounting	3	BA 113	Business Finance	3
BA 118	Business Math.	3	BA 119	Office Org. & Management ..	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Admin.	3	E 220	Tech. Report Writing	3
SS 214	Political Science	3	SS 215	Sociology	3
	Elective	3		Elective	3
		15-18			15-18

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree. The student majoring in Office and Personnel Management should be able to type.

NEW HAVEN COLLEGE

*The Industrial Administration
and Management Programs*

OFFERING THE DEGREES OF
ASSOCIATE IN SCIENCE in:

*Industrial Administration and
Management*

BACHELOR OF SCIENCE in:

Industrial Administration

*Industrial Management—
Computer Major*

New Haven College, 1962-1963

THE INDUSTRIAL ADMINISTRATION AND MANAGEMENT PROGRAMS

Director: IRWIN SIEGEL, Chairman, Department of Industrial Administration and Management

Aims and Objectives

The Industrial Administration and Management Programs offer two-year and four-year college curricula. These programs are scheduled under the Cooperative Work-Study Plan.

Two-Year Associate in Science Program: This program is designed to prepare the student for a successful career in business and industry on the management and administrative level.

Four-Year Bachelor of Science Programs: These programs provide the student with a broad background in Industrial Administration or Industrial Management to prepare him to meet the demands on administrators and managers in today's industry.

Since periods of probation are inherent in the nature of positions at the administrative and management levels, the New Haven College programs based upon the Cooperative Plan are especially significant.

Admission Requirements

An applicant for the Industrial Administration and Management Programs:

- 1. Must be a high school graduate of a secondary school of approved standing or have earned a state high school diploma;
- 2. Must meet the standards of the College in respect to high school average, and should present 15 acceptable units of secondary school work;
- 3. Must meet the standards of the College in respect to admission examinations: satisfactory score on CEEB test and/or the admission tests given by the College.

The College prescribes no set pattern of high school subjects as entrance requirements for these programs.

Programs of Study

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAM
for
Industrial Administration and Management
(Cooperative Work-Study Plan)

FIRST YEAR

Fall		Sem. Hrs.	Spring		Sem. Hrs.
A 111	Intro. Accounting	3	A 112	Intro. Accounting	3
E 113	English Composition	3	EC 202	Economic History of the U.S.	3
E 107	Speech	2	IE 114	Management Survey	3
EC 133	Economics	3	M 109	General Math. II	3
M 108	General Math. I	3	PE 112	Physical Education II	0
O 111	Orientation	1		Electives (Optional)	3-6
PE 111	Physical Education I	0			
	Elective (Optional)	3			
		15-18			15-18

<i>3rd Term</i>		<i>Sem. Hrs.</i>	<i>4th Term</i>		<i>Sem. Hrs.</i>
BA 101	Law of Contracts	3	BA 102	Law of Contracts	3
E 201	Humanities	3	E 202	Humanities	3
P 111	Psychology	3	E 220	Tech. Report Writing	3
PH 201	General Physics	3	PH 202	General Physics	3
SS 215	Sociology	3	SS 214	Political Science	3
	Elective (Optional)	3		Elective (Optional)	3
		15-18			15-18

TOTAL—Associate in Science Degree: 60 Semester Hours.

BACHELOR OF SCIENCE PROGRAM
in
Industrial Administration
(Cooperative Work-Study Plan)

<i>5th Term</i>		<i>Sem. Hrs.</i>	<i>6th Term</i>		<i>Sem. Hrs.</i>
BA 111	Principles of Selling	3	BA 112	Principles of Marketing	3
BA 118	Business Math.	3	BA 113	Business Finance	3
IE 241	Methods and Motion Study ..	3	IE 342	Work Measurement	3
PS 223	Personnel Administration ..	3	PS 244	Management Labor	
	Electives	3-6		Relations	3
		15-18			3-6
					15-18
<i>7th Term</i>			<i>8th Term</i>		
BA 216	Business Statistics	3	BA 131	Public Relations	3
IE 133	Cost Control	3	BA 302	Technical Sales	3
Phil 111	Intro. to Problems of		EM 124	Mechanical Processes	3
	Philosophy	3	IE 134	Production Control	3
PS 225	Human Relations in			Electives	3-6
	Industry	3			15-18
	Electives	3-6			
		15-18			

Restricted Electives totaling 15 semester hours are to be selected from the following courses:

			<i>Sem.</i> <i>Hrs.</i>				<i>Sem.</i> <i>Hrs.</i>
A 221	Intermediate Accounting	3		EC 442	Economic Thought	3	
A 222	Intermediate Accounting	3		EM 101	Engineering Drawing	2	
BA 211	Advertising	3		EM 102	Drawing and Desc. Geom. ...	2	
BA 221	Law of Sales	3		IE 119	Industrial Safety	3	
BA 222	Law of Commercial Papers	3		IE 123	Computer Programming	3	
BA 342	Market Research	3		IE 351	Synthetic M-T Systems	3	
EC 236	Money and Banking	3		IE 443	Factory Planning	3	
EC 240	Labor Economics	3		PS 242	Conference Leadership	3	

Unrestricted Electives totaling 6 semester hours—Any credit courses offered by the College.

TOTAL—Bachelor of Science Degree: 126 Semester Hours.

BACHELOR OF SCIENCE PROGRAM
in
Industrial Management — Computer Major
(Cooperative Work-Study Plan)

<i>5th Term</i>			<i>Sem.</i>	<i>6th Term</i>			<i>Sem.</i>
			<i>Hrs.</i>				<i>Hrs.</i>
BA 111	Principles of Selling	3		BA 112	Principles of Marketing	3	
BA 216	Business Statistics	3		BA 113	Business Finance	3	
IE 123	Computer Programming &			EC 240	Labor Economics	3	
	Data Processing	3		M 228	Math. for Computers II	3	
M 227	Math. for Computers I	3		PS 244	Management-Labor		
PS 223	Personnel Administration ..	3			Relations	3	
	Elective (Optional)	3			Elective (Optional)	3	
			15-18				15-18
 <i>7th Term</i>				 <i>8th Term</i>			
BA 342	Marketing Research	3		EC 445	Economic Analysis	3	
IE 133	Cost Control	3		IE 134	Production Control	3	
IE 507	Systems Analysis	3		IE 502	Operations Research	3	
Phil 111	Philosophy	3		IE 510	Business Games & Theory	3	
	Electives (Optional)	3-6		IE 512	Management Seminar	3	
			15-18				15-18

TOTAL—Bachelor of Science Degree: 126 Semester Hours.

NEW HAVEN COLLEGE

The Engineering Programs

OFFERING THE DEGREES OF
ASSOCIATE IN SCIENCE in:

Engineering
Pre-Engineering

BACHELOR OF SCIENCE in:

Electrical Engineering
Industrial Engineering

The Engineering Programs

Director: W. ROBERT DRESSER,
Chairman, Department of Electrical Engineering



Aims and Objectives

The Engineering Programs offer two-year college programs and four-year curricula in Industrial Engineering and Electrical Engineering.

Engineering: Two-Year Associate in Science Programs: These programs provide students with the typical two-year college engineering curricula of a standard four-year program. They enable the young man or woman to live at home, thus eliminating the on-campus expenses of room and board. Since New Haven College courses are accredited, the student will be in a position to transfer with advanced standing to the four-year program, to the Evening Credit Division of the College, or to another institution. Upon satisfactory completion of the prescribed two-year curriculum, graduates will receive the Associate in Science degree.

Pre-Engineering: Two-Year Associate in Science Program: Provision is made in this program for those students whose interest in engineering came late in their high school careers, and for those who wish an introduction to the fields of engineering. The program includes broad general cultural courses as well as those basic to any of the engineering programs. Upon satisfactory completion of the Pre-Engineering Program, a student will receive the Associate in Science degree and may either enter his choice of the advanced engineering programs or may enter employment in engineering or allied fields.

Electrical Engineering: Bachelor of Science Program: The course in Electrical Engineering is characterized by breadth of scope and emphasis upon fundamental principles. The work in mathematics, physics, chemistry, mechanics, manufacturing processes, economics, and general studies provides a broad outlook and a wide choice of work after graduation. The curriculum is so planned that there is a gradual merging of subjects into one another, from the initial cultural and scientific courses of a general nature to more professional studies in the fields of electronic computers and servomechanisms. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Electrical Engineering.

Industrial Engineering: Bachelor of Science Program: The study of Industrial Engineering prepares a student for a successful career in the manufacturing, research and service industries. Based as it is on a broad engineering background, the professional courses taken in the last two years offer a perspective which enables the graduate to cope with complex problem situations encountered in modern industry. Special attention is given in this program to preparing the student for the intelligent use of computers in modern industrial practice. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Industrial Engineering.

Admission Requirements

1. An applicant for admission to the Engineering Programs should be a graduate of a secondary school of approved standing and should present 15 acceptable units of secondary school work. These should include 2 units of algebra, 1 of plane geometry, $\frac{1}{2}$ of trigonometry, and one unit each of physics and a second science.

Deficiencies in English, mathematics, and/or science may be satisfied by summer school attendance or through enrollment in the Pre-Engineering Program.

2. Satisfactory placement in tests covering scholastic aptitude, mathematics, and English, as given by the College Entrance Examination Board or New Haven College, is required.

3. A personal interview is necessary.

NOTE—Admission requirements for the Pre-Engineering Program are given on page 22.

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAM**in
Engineering****FIRST YEAR**

<i>Fall</i>		<i>Sem.</i>	<i>Spring</i>		<i>Sem.</i>		
		<i>Hrs. Lab.</i>			<i>Hrs. Lab.</i>		
CH 101	General Chemistry	4 3	CH 102	General Chemistry	4 3		
E 113	English Composition	3 0	EC 202	Economic History			
E 107	Speech	2 0		of U. S.	3 0		
EC 133	Economics	3 0	EM 102	Drawing & Desc. Geom.	2 4		
EM 101	Engineering Drawing ..	2 4	M 102	Diff. Calculus	4 0		
M 101	College Algebra and		P 111	Psychology	3 0		
	Calculus	4 0	PH 106	Analytical Physics I	3 2		
O 101	Intro. to Engineering ..	1 0	PE 112	Physical Education II ..	0 0		
PE 111	Physical Education I ..	0 0					
		19 7			19 9		

SECOND YEAR

E 201	Humanities	3 0	E 220	Tech. Report Writing ..	3 0		
EM 221	Mechanics-Statics	3 0	EE 220	Electrical Engineering ..	4 2		
M 201	Integral Calculus	4 0	EM 322	Mechanics—Dynamics ..	3 0		
PH 205	Analytical Physics II	4 3	M 202	Differential Equations ..	3 0		
SS 214	Political Science		PH 206	Analytical Physics III	4 3		
	or						
SS 215	Sociology	3 0				17 5	
		17 3					

TOTAL—Associate in Science Degree in Engineering: 72 Semester Hours.

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAM**for****Pre-Engineering Majors
(Cooperative Work-Study Plan)****FIRST YEAR**

<i>Fall</i>		<i>Sem.</i>	<i>Spring</i>		<i>Sem.</i>		
		<i>Hrs. Lab.</i>			<i>Hrs. Lab.</i>		
CH 101	General Chemistry	4 3	CH 102	General Chemistry	4 3		
E 107	Speech	2 0	EM 102	Drawing & Desc. Geom.	2 4		
E 113	English Composition	3 0	IE 114	Management Survey	3 0		
EM 101	Engineering Drawing ..	2 4	M 113	Trigonometry	3 0		
M 109	General Math. II	3 0	P 111	Psychology	3 0		
O 101	Intro. to Engineering	1 0	PE 112	Physical Education II ..	0 0		
PE 111	Physical Education I	0 0	PH 202	General Physics	3 2		
PH 201	General Physics	3 2					
		18 9			18 9		

3rd Term			4th Term		
		Sem. Hrs. Lab.			Sem. Hrs. Lab.
E 201	Humanities	3 0	E 202	Humanities	3 0
EC 133	Economics	3 0	E 220	Tech. Report Writing ..	3 0
M 221	Calculus & Analytical Geom.	3 0	EC 202	Economic History of U. S.	3 0
PS 223	Personnel Admin. (elective)	3 0	M 222	Diff. & Integral Calculus	3 0
SS 215	Sociology	3 0	SS 214	Political Science	3 0
	Elective (Optional)	3 0		Elective (Optional)	3 0
		12-18 0			15-18 0

TOTAL—Associate in Science Degree in Pre-Engineering: 63 Semester Hours.

BACHELOR OF SCIENCE PROGRAMS
Electrical Engineering

THIRD YEAR							
Fall			Spring				
EE 331	A. C. Circuits	3	0	E 202	Humanities	3	0
EE 347	Electronic Engineering..	3	2	EE 332	A. C. Circuits	3	0
EE 451	Engineering Analysis	3	0	EE 348	Electronic Engineering..	3	2
EM 124	Mechanical Processes	3	0	EE 452	Engineering Analysis	3	0
	Prog. & Data Processing	3	0	EM 234	Mechanics of Materials	3	0
	Elective	3	0		Elective	3	0
		18	2			18	2
FOURTH YEAR							
EE 343	Machinery I	4	3	EE 344	Machinery II	4	3
EE 441	Electronic Computers ..	3	0	EE 442	Electronic Computers ..	3	0
or				or			
EE 455	Servomechanisms	3	0	EE 456	Servomechanisms	3	0
EE 461	Waves and Fields	3	0	EE 504	Laboratory—Thesis	3-5	3
Phil 111	Philosophy	3	0	SS 214	Political Science		
	Elective	3	0	or			
		16	3		Elective	3	0
				SS 215	Sociology	3	0
						16-18	6

TOTAL—Bachelor of Science Degree in Electrical Engineering: 142 Semester Hours.

Industrial Engineering

THIRD YEAR					
Fall			Spring		
EE 336	Industrial Electronics	3 0	E 202	Humanities	3 0
EM 124	Mechanical Processes	3 0	EM 234	Mechanics of Materials	3 0
IE 114	Management Survey	3 0	IE 342	Work Measurement	3 0
IE 241	Methods and Motion Study	3 3	PS 225	Human Relations in Industry	3 0
PS 223	Personnel Admin.	3 0	PS 244	Management Labor Relations	3 0
	Elective	3 0		Elective	3 0
		18 3			18 0
FOURTH YEAR					
A 113	Industrial Accounting ..	3 0	IE 134	Production Control	3 0
IE 119	Ind. Safety and Hygiene	3 0	IE 443	Factory Planning	3 0
IE 133	Cost Control	3 0	IE 502	Operations Research	3 0
IE 346	Statistical Analysis	3 0	IE 504	Laboratory—Thesis	3-5 3
Phil 111	Philosophy	3 0	SS 215	Sociology or	
	Elective	3 0	SS 214	Political Science	3 0
		15-18 0			15-17 3

TOTAL—Bachelor of Science Degree in Industrial Engineering: 140 Semester Hours.

NEW HAVEN COLLEGE

Evening Credit Programs

OFFERING THE DEGREE ASSOCIATE IN SCIENCE

in

General Studies

Accounting

Business Administration

Management

General Engineering

Electrical Engineering

Industrial Engineering

Mechanical Engineering

Metallurgical Engineering

OFFERING THE DEGREE BACHELOR OF SCIENCE

in

Accounting

Business Administration

Industrial Management

Electrical Engineering

Industrial Engineering

—General Option

—Mechanical Option

—Metallurgical Option

Calendar

THE EVENING CREDIT PROGRAMS

SUMMER SESSION 1962

Placement Examinations:		1962
English examinations	Monday, 7:00 p.m.	June 4
Scholastic Aptitude examination	Tuesday, 7:00 p.m.	June 5
Mathematics examination	Tuesday, 8:15 p.m.	June 5
Registration period	Tuesday, Wednesday	June 12, 13
Tuition due on or before	Wednesday	June 13
Classes begin	Monday	June 18
Independence Day (holiday)	Wednesday	July 4
First Term final examinations	Monday	July 23
Second Term classes begin	Wednesday	July 25
Second Term final examinations	Wednesday	August 29

FALL SEMESTER 1962

Registration for current and former students	Monday-Saturday Noon	August 20-September 1
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	August 21
Scholastic Aptitude examination	Thursday, 7:00 p.m.	August 23
Mathematics examination	Thursday, 8:15 p.m.	August 23
Labor Day (holiday)	Monday	September 3
Placement Examinations:		
English examinations	Wednesday, 7:00 p.m.	September 5
Scholastic Aptitude examination	Thursday, 7:00 p.m.	September 6
Mathematics examination	Thursday, 8:15 p.m.	September 6
Registration for new students	Tuesday-Thursday	September 11-13
Tuition due on or before	Thursday	September 13
Classes begin	Monday	September 17
Last date for admission of former students and transfers	Friday	October 5
Thanksgiving (holiday)	Thursday-Friday	November 22-23
Christmas recess	Saturday-Wednesday	December 22-January 2

1963

Classes resume	Thursday	January 3
Last evening of classes	Friday	January 11
Final examinations	Monday-Friday	January 14-18
Recess	Saturday-Wednesday	January 19-30

SPRING SEMESTER 1963

Registration for current and former students	Thursday-Saturday Noon	January 3-12
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	January 8
Scholastic Aptitude examination	Wednesday, 7:00 p.m.	January 9
Mathematics examination	Wednesday, 8:15 p.m.	January 9

1963

Registration for new students	Tuesday-Wednesday	January 22-23
Tuition due on or before	Wednesday	January 23
Classes begin	Thursday	January 31
Last date for admission of former students and transfers	Wednesday	February 20
Good Friday (holiday)	Friday	April 12
Last meeting of classes	Friday	May 17
Final examinations	Monday-Friday	May 20-24
Commencement	Sunday	June 9

SUMMER SESSION 1963

Placement Examinations:		
English examinations	Monday, 7:00 p.m.	June 3
Scholastic Aptitude examination	Tuesday, 7:00 p.m.	June 4
Mathematics examination	Tuesday, 8:15 p.m.	June 4
Registration period	Tuesday-Wednesday	June 11-12
Tuition due on or before	Wednesday	June 12
Classes begin	Monday	June 17
Independence Day (holiday)	Thursday	July 4
First Term final examinations	Monday	July 22
Second Term classes begin	Wednesday	July 24
Second Term final examinations	Wednesday	August 28

Evening Credit Program

Director: PHILLIP S. KAPLAN

Aims and Objectives

Recognizing that education, in the broadest sense of the word, is a process confined not alone to the classroom, this program of instruction provided by the College takes notice of a student's job as well as his instructional experiences.

The College believes that work is good educational experience, but that when work experience is related to academic instruction it is better. Therefore, it contends that a student's work experiences and academic experiences should be integrated as much as is possible and feasible. It sees this integration as a means whereby the traditional barrier between the academic and the practical may be broken down.

In accordance with this point of view, the College encourages and assists its students either to seek employment which is related to their programs of study, or to pursue programs of study which are related to their present or contemplated work. This the College does because it regards the student's job as a laboratory where he may apply the knowledge he gains at the College, or from which he receives practical incentives for study in the classroom. As is to be expected, the degree of relationship between work and study will vary among companies depending on the variety of experience possible in a given company and the degree of cooperation developed between the College and the company in planning for these relationships.

It is important that students pursue a related work program after the first year of study. It has been found that, although not essential to the more elementary work of the first year, work experience is essential thereafter if the student is to progress with the general level of his classes. Dependence is placed on work experience for acquiring technical terminology, skill, and familiarity with illustrations which will be used in classes. While the degree of essential relationship between work and study may be slight even in the second year, the need progressively increases in the advanced stages of the program. The most elementary office jobs for a business student, or comparable plant jobs for an engineering student, are considered sufficiently related for the earlier part of the program.

The placement activity of the College, described elsewhere in this bulletin, is designed primarily to implement the idea of an integrated program of related work and study.

Admission of Students

With the exception of "auditors", students wishing to take any course in the Evening Credit Program, whether or not they seek a degree, must satisfy the admission requirements.

Admission of Students from Secondary Schools

Requirements — The following regulations apply to the admission of students from secondary schools.

The applicant should be a graduate of an approved secondary school or should possess a state high school diploma.* In some cases, an adult who has completed at least two years of secondary school with satisfactory record may be considered, provided he performs exceptionally well on the placement examinations which are required. The admission of such an adult will be tentative for one year, during which time he must pass the state examinations for the state high school diploma.* No person will be considered who has not completed at least two years of secondary school. The quality of the secondary school record, especially of the academic subjects it contains, is given greater consideration than is the specific pattern of courses taken in secondary school.

Applicants from secondary schools are required to take admission tests, including Scholastic Aptitude, Mechanics of English, and Reading Comprehension. Those planning to enroll in engineering or mathematics programs will take also the Mathematics examination.

College Entrance Examination Board results, if satisfactory, are accepted in place of the New Haven College admission examinations.

Admission of Students Transferring from Other Colleges

Requirements — Transfer students who present evidence of completion of at least thirty semester hours of study at an accredited college with an overall average of "C" or better may be admitted on the basis of an official transcript and will not be required to take the Scholastic Aptitude Examination.

* Information regarding the examinations for the state high school diploma may be obtained from the Director of Admissions, or by writing to the Bureau of Youth Services, State Department of Education, State Office Building, Hartford, Connecticut.

For the purpose of determining placement, the following examinations are required as indicated below:

The *Mechanics of English Examination* and the *Reading Comprehension Examination* are required unless the transcript shows the completion of at least three semester hours of college English with a grade of "C" or better.

The *Mathematics Examination* is required if the student wishes to undertake engineering or mathematics, unless his transcript shows the completion of at least three semester hours of college mathematics with "C" or better grades.

Placement in courses as a result of the above examinations will be on the same basis as for applicants from secondary schools.

Transfer students who *do not have* the required thirty semester hours of work as noted above, or who have been dismissed for academic deficiency, are required to take the Scholastic Aptitude Examination in addition to the other placement examinations which are applicable, as described above.

Transfer students who are not certain of the quality of their previous work are advised to take all entrance examinations lest their transcript be delayed and of an unacceptable quality.

Advanced Standing — Credit for work applicable to the program undertaken at New Haven College will be granted tentatively upon receipt of official transcript from the previous college. The student will be notified of the credit granted. It will be officially granted only upon the successful completion of a year's work at New Haven College.

Transfer students who wish to fulfill the requirements of the A.S. degree at New Haven College must complete a minimum of eighteen semester hours at this College, twelve of which are in their field of specialization.

Transfer students for the B.S. degree must complete a minimum of thirty semester hours at this College, fifteen of which are in their field of specialization.

Application and Admission Procedures

Those interested in seeking admission should phone or write the College and arrange for a personal interview with a staff member. At the time of the interview the applicant will complete a Personal Data Form and will plan his program. Interviews may be scheduled during college office hours at the convenience of the applicant.

When the student decides to seek admission, he pays the application fee and arranges for the procurement of necessary transcripts.

Following application, the College requests the secondary school record of the applicant. Applicants who wish to present college transcripts, either for admission purposes or for advanced standing, must themselves request their college transcripts to be sent to the College. The College provides a form on which the applicant may make this request.

The applicant next takes such placement examinations as are required of him and is notified in writing of his acceptance or rejection, and of the subjects he will be required to take as a result of his performance on the placement examinations.

During the registration period he fills out the registration forms indicating the courses he wants, and pays the tuition charges.

Classification of Students

There are three classifications of students in the Evening Credit Program: Degree Student, Non-Degree Student, and Auditor.

Degree Student — The degree student indicates on his registration that he is undertaking to complete the requirements for the A.S. Degree or B.S. Degree in one of the Evening Credit Programs. He must satisfy all the admission requirements and be a fully matriculated student.

Non-Degree Student — The non-degree student is one who does not intend to meet all the requirements for a degree, but who wishes to select certain subjects which are offered as a part of the degree requirements. Although not seeking a degree, the non-degree student must satisfy all admission requirements in the same way as the degree student, thus making it possible for him to become a degree candidate at any later registration simply by so indicating on his registration. Although the student is not a candidate for a degree, he must be fully matriculated.

Auditor — The classification of auditor is assigned to persons who wish merely to attend class and listen to the discussion. Since they are not required to meet any of the admission requirements, they are not privileged to participate in discussion, nor to have tests and examinations graded by the instructor; they are not subject to attendance regulations, and are not granted any credit.

Registration

Degree and Non-Degree Students — There are two parts to registration: the completion of the registration forms and the payment of tuition. Both should be completed before the closing date of registration as stated in the calendar. There is a penalty fee for delaying either of these two processes beyond the closing date of registration.

Registration is possible within office hours during the registration dates stated in the calendar.

Registering must be in person at the College office. Forms are not mailed to students.

A separate registration is required for each of the semesters and for the summer session.

Changes of Registration and Schedules

Students are urged to plan their program carefully before completing the registration forms in order to avoid the need for requesting changes. Once the registration has been completed, the student is charged the Change of Registration Fee for each request for change which he makes. The fee is charged whether or not the request is granted, and is payable when the student completes the form requesting the change. There is no Registration Change Fee charged, however, for a request to add a course.

Schedule of Hours and Subject Load

All courses, except laboratory courses, offered in the Evening Credit Program are scheduled to meet from 7:00 P.M. to 9:45 P.M. The College is operated Monday through Friday.

A student may carry as little as three semester hours or as many as ten, depending on his wishes. The same academic standards are required of the student regardless of the number of credits he carries.

Tuition Charges, Payments, and Refunds

EVENING CREDIT PROGRAM

Tuition Charges are based on a rate of twenty dollars (\$20.00) per semester hour or equivalent time for all courses offered in the Evening Credit Program. The charges are:

One course of two semester hours or equivalent	\$ 40.00
One course of three semester hours or equivalent	60.00
One course of four semester hours or equivalent	80.00
Two courses totaling six semester hours or equivalent	120.00
Three courses totaling nine semester hours or equivalent ..	180.00

Payments — IT IS EMPHASIZED THAT NO STUDENT IS REGISTERED UNTIL HE HAS MET THE REQUIREMENTS OF THE PAYMENT SCHEDULE IN ADDITION TO THE REGULATIONS DESCRIBED ON PAGES 46 TO 48.

All students are encouraged to make tuition payments in full in accordance with cash plan schedule below. However, when more than one course is taken, provision is made for those who wish to defer their payments, the procedure for which follows:

1. An initial payment in cash consisting of:
 - a. Partial payment of tuition.
 - b. Full payment of student activity fee.
 - c. Payment of a service charge of five dollars (\$5.00) for the processing and servicing of a promissory note (see 2 below).
2. The making of a promissory note (signature of parent or guardian required of minors) for the balance of the total tuition charges.

Schedule of Payments (Tuition and Student Activity Fee)

	CASH PLAN	DEFERRED PLAN		
	Full Payment By Closing Date of Registration	Initial Payment By Closing Date of Registration	Second Payment	Third Payment
Fall Semester			<i>Nov. 1</i>	<i>Dec. 1</i>
One Course (2sh)	\$ 41.00		None	
One Course (3sh)	61.00		None	
One Course (4sh)	81.00		None	
Two Courses (6sh)	122.00	\$67.00	\$30.00	\$30.00
Three Courses (9sh)	183.00	88.00	50.00	50.00
Spring Semester			<i>March 1</i>	<i>April 1</i>
One Course (3sh)	61.00		None	
One Course (4sh)	81.00		None	
Two Courses (6sh)	122.00	67.00	30.00	30.00
Three Courses (9sh)	183.00	88.00	50.00	50.00
Summer Session				
One Course (3sh)	61.00		None	
One Course (4sh)	81.00		None	

Refunds — Tuition is refunded or cancelled by one of two methods:

1. On a percentage basis prior to the fourth meeting of any class and for any reason.
2. On a pro-rata basis of four dollars (\$4.00) per class session at any time during a semester for specific reasons having to do with illness, job changes, and draft into the armed services.

Refer to the information which follows for details of operation of the two methods.

**Refunds on a Percentage Basis for Withdrawals —
Regardless of Reasons**

Refunds or cancellations are made on a per course basis, the effective date being the date the student notifies the College of his withdrawal.

If the effective date of withdrawal occurs—

1. Any time prior to the first meeting of class, the amount refunded or cancelled is 80%.
2. Any time after the first and prior to the second meeting of class, the amount refunded or cancelled is 60%.
3. Any time after the second and prior to the third meeting of class, the amount refunded or cancelled is 40%.
4. Any time after the third and prior to the fourth meeting of class, the amount refunded or cancelled is 20%.
5. After the fourth meeting of class there is no refund or cancellation.

Refunds will be made only when the amount of tuition actually paid exceeds the amount for which the student is responsible in accordance with the above schedule. If the amount paid is less than the amount the student is responsible for, then the unpaid amount must be paid on the date of the withdrawal notice, the promissory note being cancelled.

IMPORTANT: The student is required to initiate this entire procedure by informing the College *in writing* of his intention to withdraw.

Refunds on a Pro-rata Basis for Withdrawal for Specific Reasons

Refunds or cancellations are made on the basis of four dollars (\$4.00) per class session. The student is charged at this rate for all sessions which have occurred prior to the date of the withdrawal notice and is refunded at the same rate for all sessions scheduled after the withdrawal notice. Refunds are made only when the amount of tuition actually paid exceeds the charge. If the amount paid is less than the amount for which the student is responsible, then the balance owed by the student is immediately payable, the promissory note being cancelled.

Refunds will be made at any time during any semester, but only for the following reasons:

1. Protracted illness of the *student* evidenced by a letter or certificate from the attending physician.
2. Induction (not enlistment) into the armed services, evidenced by a photostatic copy of the draft notice.

3. Job changes *initiated by the employer* involving:

- a. A change to a shift which precludes meeting the College's schedule of classes or
- b. A change to a location which is beyond the normal commuting distance from the College, both of which must be evidenced by a letter written on company stationery and signed by an officer of the employing company.

IMPORTANT: The student is required to initiate this entire procedure by informing the College *in writing* of his intention to withdraw. After the withdrawal notice and upon receipt by the College of the evidence referred to above, the refund will be made.

Fees — Evening Credit Program

APPLICATION FEE \$5.00

Payable only once at the initial time of application. Not refundable.

TUITION—See page 49.

STUDENT ACTIVITY FEE \$1.00

Charged at the rate of \$1.00 per three-semester-hour course per semester.
Not refundable.

PROMISSORY NOTE SERVICE CHARGE \$5.00

Payable at the time each promissory note is made. Not refundable.

LATE FEE \$2.00

Assessed for failure to submit registration forms or to make the initial required tuition payments by the closing date of registration each semester. Not refundable.

CHANGE OF REGISTRATION FEE \$2.00

This fee is assessed following submission of registration cards in all cases involving:

Dropping a course or courses

Substituting courses

Requesting assignment to a different section of the same course where no preference has previously been stated. Not refundable.

MAKE-UP EXAMINATION FEE \$5.00

Assessed when a student requires an end-of-semester examination at other than the scheduled time except for conflicts caused by the examination schedule. Not refundable.

GRADUATION FEE \$25.00

Assessed regardless of participation and due one month prior to graduation. Not refundable.

LABORATORY AND BREAKAGE FEES

Payable each semester by students registering for courses requiring the laboratory fee—See Course Descriptions for specific amounts.

College-Community Programs

A particular function of the community college is the ability to organize and develop programs of study which will serve the more specific needs of area industries and organizations.

New Haven College has successfully undertaken these programs as opportunity has presented itself. One example is the Southern New England Telephone Company Program in which the College and students from the company have undertaken a curriculum in advanced electrical engineering. This program is an off-campus or extension program with classes being held twice weekly in the Training Division classrooms of the Southern New England Telephone Company.

These programs are entirely company financed. Candidates must qualify by passing the New Haven College entrance examinations after being approved through testing and interviewing by a screening committee from the company. Class schedules vary with the program. In the case of the completed Olin Mathieson program students attended classes three days a week from 3:30 to 6:00 p.m. for eight 15-week semesters. They remained on their present jobs for the first semester at which point they transferred to engineering departments for on-the-job trainee assignments during the remainder of the program.

Another program is the Police Science and Administration curriculum, which is a three-year Associate Degree program for professional policemen in the New Haven area. Through the financial aid of the New Haven Foundation, the tuition charges have been significantly reduced for those officers selected for the program.

Coordinated Course Offerings

New Haven College

Quinnipiac College

In order to broaden the educational opportunities available to their students, New Haven College and Quinnipiac College have entered into a reciprocal agreement through which students formally enrolled in either institution may elect certain courses offered by the other college, subject to the approval of the respective Deans.

Credit, grades and quality points earned in courses covered by this agreement will be officially recorded at New Haven College.

The Dean of New Haven College should be consulted for additional information concerning these coordinated course offerings.

NEW HAVEN COLLEGE

Evening Credit Division

PROGRAMS OF STUDY

Associate in Science Programs

Bachelor of Science Programs

Associate in Science Programs



PROGRAM OF GENERAL STUDIES

It is recognized that there are certain groups of students who desire a general education. These students may be categorized as follows:

Those who wish a college degree in the field of general studies, but who do not desire to spend four years in a senior college.

Those who have not yet decided which technical field they want to specialize in, but who, in the meantime, desire an education of a general nature.

Those who want a general education and degree at junior college level for later transfer to a senior college for a bachelor's degree.

Those college graduates of technical programs who now find that their need lies in the field of general studies and the corresponding acquisition of educational breadth.

The College is meeting the needs of these students by offering the program outlined below. The degree Associate in Science in General Studies is awarded upon the successful completion of the requirements. A total of 60 semester hours of study is required.

The total hours required are distributed as follows:

I. Required Courses, totaling 36 sem. hrs.

		<i>Sem.</i> <i>Hrs.</i>
*E 113	English Composition	3
E 114	Speech	3
E 118	Modern Literature (Spring Only)	3
E 201-202	Humanities	6
EC 133	Economics	3
P 111	Psychology	3
PHIL 111	Philosophy	
	or	
PHIL 113	History of Philosophy	3
SC 111-112	Modern Science or Science electives	6
SS 113-114	Sociology	
	or	
SS 121-122	Political Science	6

II. Elective Courses, totaling 24 sem. hrs.

To be selected from any credit offerings of the College for which the student satisfies prerequisites. See course descriptions.

TOTAL HOURS REQUIRED FOR THE ASSOCIATE IN SCIENCE DEGREE 60 sem hrs.

For other courses available as substitutes or electives at Quinnipiac College, consult the Dean.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

ACCOUNTING

(Associate in Science)

In order to acquire the Associate in Science in Accounting, all students are required to take basic courses in accounting, law, English, and economics. The successful completion of these courses earns the student the 63 semester hours credit required for the degree.

This program represents approximately the first half of the Bachelor of Science program in Accounting. See page 63.

Required Courses, totaling 63 sem. hrs.

FIRST YEAR

	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
A 111	Introductory Accounting ..	3	A 112	Introductory Accounting ..	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
*E 113	English Composition	3	E 114	Speech	3

SECOND YEAR

A 221	Intermediate Accounting ..	3	A 222	Intermediate Accounting ..	3
A 223	Cost Accounting	3	A 224	Cost Accounting	3
EC 133	Economics	3	EC 202	Economic History of U.S. ..	3

THIRD YEAR

A 331	Advanced Accounting	3	A 332	Advanced Accounting	3
A 333	Auditing	3	A 334	Auditing	3
E 201	Humanities	3	E 202	Humanities	3

FOURTH YEAR

BA 118	Business Mathematics	3	BA 113	Business Finance	3
E 220	Technical Report Writing	3			

TOTAL REQUIRED FOR DEGREE 63 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on placement examination.

BUSINESS ADMINISTRATION

(Associate in Science)

In order to acquire the Associate in Science in Business Administration, all students are required to take a basic program which includes accounting, law, economics, general studies, and business. The successful completion of these courses earns the student the 63 semester hours of credit required for the degree.

This program represents the first half of the Bachelor of Science program in Business Administration. See page 64.

Required Courses, totaling 63 sem. hrs.

FIRST YEAR

	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
A 111	Introductory Accounting ..	3	A 112	Introductory Accounting ..	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
•E 113	English Composition	3	IE 114	Management Survey	3

SECOND YEAR

BA 118	Business Mathematics	3	BA 113	Business Finance	3
EC 133	Economics	3	E 114	Speech	3
P 111	Psychology	3	EC 202	Economic History of U.S. ..	3

THIRD YEAR

BA 111	Principles of Selling	3	BA 112	Principles of Marketing	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Administration..	3	PS 225	Human Relations in Industry	3

FOURTH YEAR

BA 131	Public Relations	3	BA 216	Business Statistics or	
E 220	Tech. Report Writing	3	PS 244	Management Labor Relations	3

TOTAL REQUIRED FOR DEGREE 63 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

MANAGEMENT

(Associate in Science)

The Program of Management is designed for persons whose administrative responsibilities may be in a staff department dealing with materials, methods, and personnel phases of business. It does not include technical engineering work.

In order to acquire the Associate in Science in Management all students must take a pattern of required courses. The successful completion of the required courses earns the student the 69 semester hours required for the degree.

Required Courses, totaling 69 sem. hrs.

FIRST YEAR

	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
A 111	Introductory Accounting ..	3	A 112	Introductory Accounting ..	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
*E 113	English Composition	3	E 114	Speech	3

SECOND YEAR

BA 111	Principles of Selling	3	BA 112	Principles of Marketing	3
EC 133	Economics	3	EC 202	Economic Hist. of U.S.	3
IE 114	Management Survey	3	P 111	Psychology	3

THIRD YEAR

BA 118	Business Mathematics	3	BA 113	Business Finance	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Administration..	3	PS 225	Human Relations in Industry	3

FOURTH YEAR

E 220	Tech. Report Writing	3	BA 216	Business Statistics	3
IE 133	Cost Control	3	IE 134	Production Control	3
			PS 244	Management Labor Relations	3

TOTAL REQUIRED FOR DEGREE 69 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

GENERAL ENGINEERING

(Associate in Science)

The primary purpose of the General Engineering program is to meet the needs of those students who have reason not to specialize in any of the specific fields of engineering offered by the College (Electrical, Industrial, Mechanical, and Metallurgical). Their particular need may cut across any two or more of these special fields.

Since most of the technical electives and some of the non-technical ones are offered in alternate years, it is extremely important that the student consult with the department chairman or a staff advisor during the latter portion of his second year in order to outline his program for the third and fourth years.

Requirements for the degree fall into two groups and are outlined below.

I. Required Courses totaling 49 sem. hrs.

FIRST YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
*E 113 English Composition	3	E 114 Speech	3
EM 101 Engineering Drawing	2	EM 102 Drawing & Descriptive Geometry	2
*M 111 College Algebra	3	*M 113 Trigonometry	3

SECOND YEAR

A 113 Industrial Accounting	3	E 202 Humanities	3
E 201 Humanities	3	IE 114 Management Survey	3
PH 221 Engr. Physics (with lab.) ..	3	PH 222 Engr. Physics (with lab.) ..	3

THIRD AND FOURTH YEARS

E 220 Technical Report Writing	3	EE 222 Elements of Elec. Engr.	3
EM 123 Engineering Materials	3	EM 124 Mechanical Processes	3
Restricted Electives		IE 134 Production Control	3
		Restricted Electives	

II. Restricted Electives totaling 15 sem. hrs.

(Restricted electives are selected from the courses listed below.)

	<i>Sem. Hrs.</i>		<i>Sem. Hrs.</i>
CH 221-222 Engineering Chemistry (with lab.)	6	IE 119 Industrial Safety & Hygiene	3
EC 133 Economics	3	IE 133 Cost Control	3
EC 204 Engineering Economics ..	3	IE 241 Methods & Motion Study	3
EC 233 Basic Electronics	3	IE 342 Work Measurement	3
EE 252 Illumination	3	M 221 Calculus & Anal. Geom.	3
EE 336 Industrial Electronics	3	M 222 Diff. & Integral Calc.	3
EM 335-336 Tool Design	6	MT 219 Physical Metallurgy	3
(Offered in Fall of odd years)		MT 220 Metallography	3
		PH 323 Modern Physics	3

TOTAL REQUIRED FOR DEGREE 64 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

ELECTRICAL ENGINEERING

(Associate in Science)

The Electrical Engineering program is designed so that the first three and one-half years consist of a sequence of courses required of all students. This sequence may be described as basic for electrical engineering. The successful completion of this sequence establishes the student as a candidate for the Associate in Science in Electrical Engineering. In order to complete the degree requirements, the student must acquire at least 15 semester hours of credit beyond the basic sequence requirements of 55 semester hours making a total of 70 semester hours of credit.

During the latter part of his second year, the student should consult the department chairman or a staff advisor to outline the sequence of courses for the remaining portion of his degree requirements. Since some electives are offered on an alternate year basis, proper planning is essential.

I. Required Courses totaling 55 sem. hrs.

FIRST YEAR

<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
*E 113	English Composition	3	E 114	Speech	3
EM 101	Engineering Drawing	2	EM 102	Drawing & Descriptive Geometry	2
*M 111	College Algebra	3	M 113	Trigonometry	3

SECOND YEAR

E 201	Humanities	3	E 202	Humanities	3
M 221	Calculus & Analytic Geometry	3	M 222	Diff. & Integral Calculus ..	3
PH 221	Engineering Physics (with lab)	3	PH 222	Engineering Physics (with lab)	3

THIRD YEAR

EE 223	Prin. of Electrical Engr.	3	E 220	Tech. Report Writing	3
M 323	Adv. Math. for Engr. I	3	EE 224	Prin. of Electrical Engr.	3
PH 323	Modern Physics	3		Restricted Elective	

FOURTH YEAR

EE 331	A. C. Circuits	3	EE 332	A. C. Circuits	3
	Restricted Electives			Restricted Electives	

II. Restricted Electives totaling 15 sem. hrs.

The restricted electives are to be selected from the following courses (6 s.h. in E.E.):

		<i>Sem. Hrs.</i>			<i>Sem. Hrs.</i>
EE 233	Basic Electronics	3	EM 221	Mechanics—Statics	3
EE 236	Industrial Electronics	3	EM 322	Mechanics—Dynamics	3
EE 252	Illumination	3	M 324	Adv. Math. for Engr. II	3
EE 330	Electrical Measurements ..	3	CH 221	Engineering Chemistry	
EE 341	Direct Current Machines ..	3	222	(with lab)	6
EE 342	A. C. Machines	3			

TOTAL REQUIRED FOR DEGREE 70 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

INDUSTRIAL ENGINEERING

(Associate in Science)

The Industrial Engineering program combines basic mechanical engineering with study in the field of industrial engineering. The Associate in Science in Industrial Engineering is awarded upon completion of all requirements.

This program represents approximately the first half of the Bachelor of Science program in Industrial Engineering. See page 67.

I. Required Courses totaling 64 sem. hrs.

FIRST YEAR

<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
*E 113	English Composition	3	EM 102	Drawing & Descriptive	
EM 101	Engineering Drawing	2		Geometry	2
*M 111	College Algebra	3	IE 114	Management Survey	3
			M 113	Trigonometry	3

SECOND YEAR

EC 133	Economics	3	EC 204	Engineering Economics	3
M 221	Calculus & Anal. Geom.	3	M 222	Diff. & Integral Calculus ..	3
PH 221	Engr. Physics (with lab) ..	3	PH 222	Engr. Physics (with lab.) ..	3

THIRD YEAR

E 114	Speech	3	E 202	Humanities	3
E 201	Humanities	3	EE 222	Elements of Electrical	
EM 123	Engineering Materials	3		Engineering	3
			EM 124	Mechanical Processes	3

FOURTH YEAR

IE 241	Methods & Motion Study ..	3	E 220	Technical Report Writing	3
CH 221	Engr. Chemistry		CH 222	Engr. Chemistry	
	(with lab.)	3		(with lab.)	3

II. **Restricted Electives totaling 6 sem. hrs.

TOTAL REQUIRED FOR THE DEGREE 70 sem. hrs.

* Entrance into these courses permitted upon satisfactory performance on placement examinations.

** Restricted Electives must be selected from the course offerings in Industrial Engineering.

MECHANICAL ENGINEERING

(Associate in Science)

The Mechanical Engineering program consists in the first three years of a sequence of courses totaling 52 semester hours required of all students. This sequence may be called basic mechanical engineering. The successful completion of this sequence establishes the student as a candidate for the Associate in Science in Mechanical Engineering. In order to complete the requirements for the degree, the student must acquire at least 18 semester hours of credit, making a total of 70 hours of credit. These 18 hours must be taken in advanced courses in engineering, listed under Restricted Electives, 6 of which must be in mechanical engineering.

During the latter part of his second year, the student should consult a staff advisor in order to plan the sequence of courses for the remaining portion of his degree requirements. Since many of the electives are offered in alternate years, proper planning is essential.

I. Required Courses totaling 52 sem. hrs.

FIRST YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
*E 113 English Composition	3	E 114 Speech	3
EM 101 Engineering Drawing	2	EM 102 Drawing & Descriptive Geometry	2
*M 111 College Algebra	3	*M 113 Trigonometry	3

SECOND YEAR

EM 123 Engineering Materials	3	EM 124 Mechanical Processes	3
M 221 Calculus & Anal. Geom.	3	M 222 Diff. & Integral Calculus ..	3
PH 221 Engr. Physics (with lab.) ..	3	PH 222 Engr. Physics (with lab.) ..	3

THIRD AND FOURTH YEARS

E 201 Humanities	3	E 202 Humanities	3
E 220 Tech. Report Writing	3	EE 222 Elem. of Electrical Engr. ..	3
EM 221 Mechanics—Statics	3	EM 322 Mechanics—Dynamics	3

II. Restricted Electives totaling 18 sem. hrs.

Sem. Hrs.

CH 221-222	Engr. Chemistry (with lab.)	6	
EM 234	Mechanics of Materials	3	(Spring)
EM 331-332	Thermodynamics	6	
EM 333	Mechanisms	3	(Fall)
EM 333-334	Machine Design	6	(Offered in Fall of even years)
EM 335-336	Tool Design	6	(Offered in Fall of odd years)
M 323-324	Adv. Math. I & II	6	
MT 219	Physical Metallurgy	3	
PH 323	Modern Physics	3	
PH 315	Nuclear Physics	3	(Fall)

TOTAL REQUIRED FOR DEGREE 70 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

METALLURGICAL ENGINEERING

(Associate in Science)

The Metallurgical Engineering Program is designed so that the first three years contain a sequence of courses required of all students. Successful completion of this sequence of 52 semester hours establishes the student as a candidate for the Associate in Science in Metallurgical Engineering. In order to complete the degree requirements, the student must acquire 18 additional semester hours credit to be elected from restricted electives, at least 6 of which must be in Metallurgy.

Since the first opportunity for elective courses occurs in the fourth year, the student must consult a staff advisor during the latter portion of his third year so that the course sequence may be arranged. Since some of the electives are offered in alternate years, proper planning is essential.

Requirements for the degree fall into two groups and are outlined below:

I. Required courses totaling 52 sem. hrs.

FIRST YEAR

<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
*E 113	English Composition	3	E 114	Speech	3
EM 101	Engineering Drawing	2	EM 102	Drawing & Descriptive Geometry	2
*M 111	College Algebra	3	*M 113	Trigonometry	3

SECOND YEAR

E 201	Humanities	3	E 202	Humanities	3
M 221	Calculus & Anal. Geom.	3	M 222	Diff. & Integral Calculus ..	3
PH 221	Engr. Physics (with lab.) ..	3	PH 222	Engr. Physics (with lab.) ..	3

THIRD YEAR

E 220	Tech. Report Writing	3	CH 222	Engr. Chem. (with lab.) ..	3
CH 221	Engr. Chem. (with lab.) ..	3	EM 124	Mechanical Processes	3
MT 219	Physical Metallurgy	3	MT 220	Metallography	3

II. Restricted Electives 18 sem. hrs.

		<i>Sem. Hrs.</i>
EE 222	Elements of Electrical Engineering	3 (Spring)
EM 123	Engineering Materials	3 (Fall)
EM 221	Mechanics—Statics	3
EM 234	Mechanics of Materials	3 (Spring)
EM 322	Mechanics—Dynamics	3 (Spring)
MT 224	Nuclear Metallurgy	3 (Spring)
MT 331	Non Ferrous Metallurgy	3 (Fall)
MT 342	Steels & Their Heat Treatment	3 (Spring)
PH 323	Modern Physics	3
PH 315	Nuclear Physics	3 (Fall)

TOTAL REQUIRED FOR DEGREE 70 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

BACHELOR OF SCIENCE PROGRAMS

Business: Students may earn a Bachelor of Science degree in Business by majoring in Accounting or Business Administration.

Engineering: Students may earn a Bachelor of Science degree in Engineering by majoring in Electrical or Industrial Engineering. Through the completion of the required courses and through the selection of electives, students may gain knowledge in the fields of electrical, mechanical, or metallurgical engineering; or in the field of personnel administration.

Industrial Management: Students may earn a Bachelor of Science degree in Industrial Management through the completion of required and elective courses in management, cost, personnel and basic engineering.

ACCOUNTING

(Bachelor of Science)

In order to acquire the Bachelor of Science in Accounting, all students are required to take basic courses in accounting, business and liberal arts. The successful completion of these courses grants the student 105 semester hours credit of the 126 hours required for the degree. Of the remaining 21 hours of credit required for the degree, 15 hours must be elected from the group of restricted electives listed below. The remaining 6 semester hours credit are elected from any field of study. Prerequisites for all electives must be satisfied either by formal courses or by equivalent practical experience.

I. Required courses, totaling 105 sem. hrs.

FIRST YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>	<i>Spring</i>	<i>Sem. Hrs.</i>
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A 111	Introductory Accounting ..	3	A 112	Introductory Accounting ..	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
*E 113	English Composition	3	E 114	Speech	3

SECOND YEAR

A 221	Intermediate Accounting ..	3	A 222	Intermediate Accounting ..	3
EC 133	Economics	3	E 220	Technical Report Writing	3
IE 114	Management Survey	3	EC 202	Economic History of U.S. ..	3

THIRD YEAR

A 223	Cost Accounting	3	A 224	Cost Accounting	3
A 331	Advanced Accounting	3	A 332	Advanced Accounting	3
E 201	Humanities	3	E 202	Humanities	3

FOURTH YEAR

A 333	Auditing	3	A 334	Auditing	3
BA 118	Business Mathematics	3	BA 113	Business Finance	3
P 111	Psychology	3	Restricted Elective		3

FIFTH YEAR

A 335	Income Tax Procedure	3	A 336	Income Tax Procedure	3
PS 223	Personnel Administration	3	PS 225	Human Relations in	
Social Studies Elective SS 113			Industry		3
or SS 121		3	Social Studies Elective SS 114		
			or SS 122		3

SIXTH YEAR					
<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
A 443	Accounting Systems I	3	BA 216	Business Statistics	3
Science Elective SC 111, PH 221, CH 221		3	Science Elective SC 112, PH 222, CH 222		3
PHIL 111 or 113		3	EC 442	Economic Thought	3

SEVENTH YEAR

(Restricted and Unrestricted Electives totaling 21 semester hours)

II. Restricted Electives totaling 15 semester hours are selected from the following courses:

A 444	Accounting Systems II	3	BA 221	Law of Sales	3
BA 104	Advertising	3	BA 222	Law of Commercial Paper & Bankruptcy	3
BA 111	Principles of Selling	3	EC 236	Money and Banking	3
BA 112	Principles of Marketing	3	PS 244	Management Labor Relations	3
BA 119	Office Org. & Mgmt.	3			
BA 131	Public Relations	3			

III. Unrestricted Electives total 6 semester hours. (Any credit courses offered by the College).

TOTAL REQUIRED FOR THE DEGREE 126 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

BUSINESS ADMINISTRATION
(Bachelor of Science)

In order to acquire the Bachelor of Science in Business Administration, students must take a pattern of business courses. The successful completion of these courses grants the student 96 semester hours of credit of the 126 semester hours required for the degree. Of the remaining 30 semester hours beyond the required pattern, the student must elect 18 semester hours from the field of business. The remaining 12 semester hours may be elected from the field of business or from any other field of study. Prerequisites for all electives must be satisfied either by formal courses or by equivalent practical experience.

I. Required courses, totaling					96 sem. hrs.
FIRST YEAR					
<i>Fall</i>		<i>Sem. Hrs.</i>	<i>Spring</i>		<i>Sem. Hrs.</i>
A 111	Introductory Accounting ..	3	A 112	Introductory Accounting ..	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
*E 113	English Composition	3	IE 114	Management Survey	3
SECOND YEAR					
BA 118	Business Mathematics	3	BA 113	Business Finance	3
EC 133	Economics	3	E 114	Speech	3
P 111	Psychology	3	EC 202	Economic History of U.S.	3
THIRD YEAR					
BA 111	Principles of Selling	3	BA 112	Principles of Marketing	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Administration	3	PS 225	Human Relations in Industry	3

FOURTH YEAR

<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
BA 221 Law of Sales	3	BA 222 Law of Commercial		
E 220 Tech. Report Writing	3	Paper & Bankruptcy	3	
Science Elective SC 112, PH 221,		PS 244 Management Labor Rel. ..	3	
or CH 221	3	Science Elective SC 113, PH 222,		
		or CH 222	3	

FIFTH YEAR

BA 104 Advertising	3	BA 216 Business Statistics	3
BA 131 Public Relations	3	EC 236 Money and Banking	3
Social Studies Elective SS 113		Social Studies Elective SS 114	
or SS 121	3	or SS 122	3

SIXTH AND SEVENTH YEAR

PHIL 111 or 113 Philosophy	3	EC 442 Economic Thought	3
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(Restricted and unrestricted electives totaling 30 s.h.)

II. Restricted Electives totaling 18 semester hours are to be selected from the following courses:

A 221-2 Intermediate Accounting ..	6	IE 133 Cost Control	3
BA 119 Office Org. and Mgmt.	3	IE 134 Production Control	3
BA 342 Market Research	3	PS 242 Conference Leadership	3

III. Unrestricted Electives totaling 12 semester hours 12
(Any credit courses offered by the College)

TOTAL REQUIRED FOR DEGREE 126 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

ELECTRICAL ENGINEERING

(Bachelor of Science)

The Electrical Engineering Program combines the basic courses in chemistry, mathematics and physics with advanced studies in mechanics and electrical courses leading to specialization in such fields as electronic computers, communications, power transmission and servomechanisms.

In order to acquire the Bachelor of Science Degree in Electrical Engineering all students must take a pattern of required courses. The successful completion of the required courses earns the student 130 hours of the 142 semester hours of credit required for the degree. The remaining 12 hours of credit are selected from electives in the fields of study listed below:

I. Required courses totaling 130 sem. hrs.

FIRST YEAR

<i>Fall</i>		<i>Sem.</i> <i>Hrs.</i>	<i>Spring</i>		<i>Sem.</i> <i>Hrs.</i>
*E 113	English Composition	3	E 114	Speech	3
EM 101	Engineering Drawing	2	EM 102	Drwg. & Desc. Geom.	2
*M 111	College Algebra	3	*M 113	Trigonometry	3

SECOND YEAR

E 201 Humanities	3	E 202 Humanities	3
M 221 Calculus & Anal. Geom.	3	M 222 Diff. and Int. Calculus	3
PH 221 Engr. Physics (with lab.) ..	3	PH 222 Engr. Physics (with lab.) ..	3

THIRD YEAR

	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
EE 223	Prin. of Elec. Engr.	3	E 220	Tech. Report Writing	3
M 323	Adv. Math. for Engr. I	3	EE 224	Prin. of Elec. Engr.	3
PH 323	Modern Physics	3	M 324	Adv. Math. for Engr. II	3

FOURTH YEAR

EE 331	A. C. Circuits	3	EE 332	A. C. Circuits	3
EE 341	D. C. Machines	3	EE 342	A. C. Machines	3
IE 114	Management Survey	3	P 111	Psychology	3

FIFTH YEAR

CH 221	Engr. Chem. (with lab.) ..	3	CH 222	Engr. Chem. (with lab.) ..	3
EE 233	Basic Electronics (or elective)	3	EE 236	Industrial Electronics (or elective)	3
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3

SIXTH YEAR

EC 133	Economics	3	EC 204	Engineering Economics	3
EE 347	Electronic Engineering	3	EE 348	Electronic Engineering	3
EM 221	Mechanics—Statics	3	EM 322	Mechanics—Dynamics	3

SEVENTH YEAR

EE 451	Engineering Analysis	3	EE 452	Engineering Analysis	3
Social Studies Elective			Social Studies Elective		
SS 113 or SS 121	3		SS 114 or SS 122	3	
Restricted Elective	3		Restricted Elective	3	

EIGHTH YEAR

EE 441	Electronic Computers		EE 442	Electronic Computers	
	or			or	
EE 455	Servomechanisms and Feed- back Control Systems	3	EE 456	Servomechanisms and Feed- back Control Systems	3
PS 223	Personnel Admin.	3	PHIL 111 or 113	Philosophy	3
	Restricted Elective	3		Restricted Elective	3

II. Restricted Electives totaling 12 semester hours are to be selected from the following areas: Accounting (3), Chemistry, Engineering, Management, or Personnel Supervision.

TOTAL REQUIRED FOR DEGREE 142 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

INDUSTRIAL ENGINEERING — GENERAL OPTION

(Bachelor of Science)

The Program of Industrial Engineering is planned to prepare students to apply the engineering method to the problems of management in industry.

In order to acquire the Bachelor of Science in Industrial Engineering, all students must take a pattern of required courses. The successful completion of the required courses earns the student 128 hours of the 140

semester hours of credit required for the degree. The remaining 12 hours of credit are selected from restricted electives in the fields of study indicated below.

I. Required courses, totaling 128 sem. hrs.

FIRST YEAR

	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
*E 113	English Composition	3	EM 102	Drawing & Desc. Geom.	2
EM 101	Engineering Drawing	2	IE 114	Management Survey	3
*M 111	College Algebra	3	*M 113	Trigonometry	3

SECOND YEAR

EC 133	Economics	3	EC 204	Engineering Economics	3
M 221	Calculus and Anal. Geom.	3	M 222	Diff. & Integral Calculus ..	3
PH 221	Engr. Physics (with lab.) ..	3	PH 222	Engr. Physics (with lab.) ..	3

THIRD YEAR

E 201	Humanities	3	E 202	Humanities	3
EM 123	Engineering Materials	3	EE 222	Elements of Elec. Engr.	3
P 111	Psychology	3	EM 124	Mechanical Processes	3

FOURTH YEAR

A 113	Industrial Accounting	3	CH 222	Engr. Chem. (with lab.)	3
CH 221	Engr. Chem. (with lab.)	3	E 220	Tech. Report Writing	3
PS 223	Personnel Administration	3	PS 244	Management Labor Relations	3

FIFTH YEAR

E 114	Speech	3	EE 336	Industrial Electronics	3
EM 221	Mechanics—Statics	3	EM 322	Mechanics—Dynamics	3
M 323	Adv. Math. for Engr. I	3	PS 225	Human Relations in Industry	3

SIXTH YEAR

EM 331	Thermodynamics	3	EM 332	Thermodynamics	3
IE 133	Cost Control	3	IE 134	Production Control	3
Social Studies Elective SS 113 or SS 121	3		Social Studies Elective SS 114 or SS 122	3	

SEVENTH YEAR

IE 241	Methods & Motion Study ..	3	IE 342	Work Measurement	3
IE 435	Statistical Methods (with lab.)	4	IE 436	Quality Control	3
	Restricted Elective	3		Restricted Elective	3

EIGHTH YEAR

IE 443	Factory Planning	3	IE 502	Operations Research	3
PHIL 111 or 113	Philosophy	3		Restricted Elective	3
	Restricted Elective	3			

II. Restricted Electives—12 sem. hrs. These electives must be selected from the following areas: Chemistry, Engineering, Mathematics, Personnel Supervision, or Physics.

TOTAL REQUIRED FOR DEGREE 140 sem. hrs.

* Entrance into these courses is permitted upon satisfactory performance on the placement examinations.

INDUSTRIAL ENGINEERING—MECHANICAL OPTION
(Bachelor of Science)

The Industrial Engineering-Mechanical Option program combines basic mechanical engineering with study in the field of industrial engineering. In order to acquire the Bachelor of Science in Industrial Engineering — Mechanical Option, all students must take a pattern of required courses. The successful completion of the required courses earns the student 130 hours of the 142 semester hours of credit required for the degree. The remaining 12 hours of credit are selected from restricted electives in the fields of study indicated below.

I. Required Courses, totaling 130 sem. hrs.

FIRST YEAR					
<i>Fall</i>		<i>Sem.</i> <i>Hrs.</i>	<i>Spring</i>		<i>Sem.</i> <i>Hrs.</i>
*E 113	English Composition	3	E 114	Speech	3
EM 101	Engineering Drawing	2	EM 102	Drawing & Desc. Geometry	2
*M 111	College Algebra	3	*M 113	Trigonometry	3
SECOND YEAR					
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3
M 221	Calculus & Anal. Geom.	3	M 222	Diff. & Integ. Calculus	3
PH 221	Engr. Physics (with lab.) ..	3	PH 222	Engr. Physics (with lab.) ..	3
THIRD YEAR					
E 201	Humanities	3	E 202	Humanities	3
EM 221	Mechanics—Statics	3	EM 322	Mechanics—Dynamics	3
M 323	Adv. Math. for Engr. I	3	M 324	Adv. Math. for Engr. II	3
FOURTH YEAR					
IE 133	Cost Control	3	E 220	Tech. Report Writing	3
IE 114	Management Survey	3	EM 234	Mechanics of Materials	3
PH 323	Modern Physics	3	IE 134	Production Control	3
FIFTH YEAR					
CH 221	Engr. Chem. (with lab.) ..	3	CH 222	Engr. Chem. (with lab.) ..	3
EM 331	Thermodynamics	3	EE 222	Elem. of Elec. Engr.	3
P 111	Psychology	3	EM 332	Thermodynamics	3
SIXTH YEAR					
EC 133	Economics	3	EC 204	Engr. Economics	3
EM 343	Mechanisms	3	EE 336	Industrial Electronics	3
Social Studies Elective			Social Studies Electives		
SS 113 or SS 121		3	SS 114 or SS 122		3
SEVENTH YEAR					
EM 405	Fluid Mechanics	3	EM 416	Heat Transfer	3
IE 241	Methods & Motion Study ..	3	IE 342	Work Measurement	3
Restricted Elective		3	Restricted Elective		3
EIGHTH YEAR					
IE 443	Factory Planning	3	IE 502	Operations Research	3
PS 223	Personnel Admin.	3	PHIL 111	or 113 Philosophy	3
Restricted Elective		3	Restricted Elective		3

II. Restricted Electives totaling 12 semester hours are to be selected from the following areas: Accounting (3), Chemistry, Engineering, Industrial Management, Personnel Supervision, or Physics.

TOTAL REQUIRED FOR DEGREE 142 sem. hrs.

* Entrance to these courses permitted upon satisfactory performance on the placement examinations.

INDUSTRIAL ENGINEERING—METALLURGICAL OPTION

(Bachelor of Science)

The Industrial Engineering-Metallurgical Option program combines basic metallurgical engineering with study in the field of industrial engineering.

In order to acquire the Bachelor of Science in Industrial Engineering-Metallurgical Option, all students must take a pattern of required courses. The successful completion of the required courses earns the student 130 hours of the 142 semester hours of credit required for the degree. The remaining 12 hours of credit are selected from restricted electives in the fields of study indicated below.

I. Required courses, totaling 130 sem. hrs.

FIRST YEAR					
	<i>Fall</i>	<i>Sem. Hrs.</i>		<i>Spring</i>	<i>Sem. Hrs.</i>
*E 113	English Composition	3	E 114	Speech	3
EM 101	Engineering Drawing	2	EM 102	Drwg. & Desc. Geom.	2
*M 111	College Algebra	3	*M 113	Trigonometry	3
SECOND YEAR					
E 201	Humanities	3	E 202	Humanities	3
M 221	Calculus & Ana. Geom.	3	M 222	Diff. & Integ. Calculus	3
PH 221	Engr. Physics (with lab.) ..	3	PH 222	Engr. Physics (with lab.) ..	3
THIRD YEAR					
CH 221	Engr. Chem. (with lab.) ..	3	CH 222	Engr. Chem. (with lab.) ..	3
EM 221	Mechanics—Statics	3	EM 124	Mechanical Processes	3
M 323	Adv. Math. for Engr. I	3	EM 322	Mechanics—Dynamics	3
FOURTH YEAR					
EM 331	Thermodynamics	3	E 220	Tech. Report Writing	3
IE 114	Management Survey	3	EM 332	Thermodynamics	3
MT 219	Physical Metallurgy	3	MT 220	Metallography	3
FIFTH YEAR					
EC 133	Economics	3	EC 204	Engineering Economics	3
P 111	Psychology	3	EE 222	Elem. of Elec. Engr.	3
PH 315	Nuclear Physics	3	MT 224	Nuclear Metallurgy	3
SIXTH YEAR					
IE 133	Cost Control	3	EE 336	Industrial Electronics	3
PS 223	Personnel Admin.	3	IE 134	Production Control	3
SS 113	Social Studies Elective	3	SS 114	Social Studies Elective	3
	or 121			or 122	
SEVENTH YEAR					
IE 241	Methods & Motion Study ..	3	EM 234	Mechanics of Materials	3
MT 331	Non Ferrous Metallurgy ..	3	IE 342	Work Measurement	3
PHIL 111 or 113	Philosophy	3	MT 342	Steels & Their Heat Treatment	3
EIGHTH YEAR					
IE 443	Factory Planning	3	IE 502	Operations Research	3
	Restricted Electives	6		Restricted Electives	6

II. Restricted Electives totaling 12 semester hours are to be selected from the following areas: Accounting (3), Chemistry, Engineering, Industrial Management, Personnel Supervision, or Physics.

TOTAL REQUIRED FOR DEGREE 142 sem. hrs.

INDUSTRIAL MANAGEMENT
(Bachelor of Science)

The Program of Industrial Management is designed for persons whose administrative responsibilities may be in a staff department dealing with production, cost and personnel phases of business. It includes engineering work at the fundamental level.

In order to acquire the Bachelor of Science in Industrial Management, all students must take a pattern of required courses. The successful completion of the required courses earns the student 105 hours of the 126 semester hours required for the degree. Of the remaining 21 semester hours beyond the required pattern, the student must elect 15 hours from the restricted electives while the remaining 6 semester hours may be elected from any field of study. Students successfully completing the first 69 semester hours of this program may request and receive the Associate in Science degree in Industrial Management provided all requirements as outlined on page 57 have been met.

I. Required courses, totaling 105 sem. hrs.

		FIRST YEAR			
<i>Fall</i>		<i>Sem.</i>	<i>Spring</i>		<i>Sem.</i>
		<i>Hrs.</i>			<i>Hrs.</i>
A 111	Intro. Accounting	3	A 112	Intro. Accounting	3
BA 101	Law of Contracts & Bus. Associations	3	BA 102	Law of Contracts & Bus. Associations	3
*E 113	English Composition	3	E 114	Speech	3
SECOND YEAR					
BA 111	Prin. of Selling	3	BA 112	Prin. of Marketing	3
EC 133	Economics	3	EC 202	Economic Hist. of U.S.	3
IE 114	Management Survey	3	P 111	Psychology	3
THIRD YEAR					
BA 118	Business Mathematics	3	BA 113	Business Finance	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Admin.	3	PS 225	Human Relations in Industry	3
FOURTH YEAR					
E 220	Tech. Report Writing	3	BA 216	Business Statistics	3
IE 119	Industrial Safety and Hygiene	3	IE 134	Production Control	3
IE 133	Cost Control	3	PS 244	Management Labor Relations	3
FIFTH YEAR					
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3
*M 111	College Algebra	3	M 113	Trigonometry	3
Social Studies Elective			Social Studies Elective		
SS 113 or SS 121		3	SS 114 or SS 122		3
SIXTH YEAR					
IE 241	Methods & Motion Study	3	BA 342	Market Research	3
PH 221	Engineering Physics	3	PH 222	Engineering Physics	3
PHIL 111 or 113 Philosophy		3	Electives		

II. Restricted Electives totaling 15 semester hours are to be selected from the following courses:

A 221-2	Intermediate Accounting ..	6	EM 101-2	Engineering Drawing	4
BA 104	Advertising	3	IE 342	Work Measurement	3
BA 131	Public Relations	3	PH 323	Modern Physics	3
EC 204	Engineering Economics	3	PS 242	Conference Leadership	3
EC 236	Money and Banking	3			

III. Unrestricted Electives totaling 6 semester hours 6 sem. hrs.
(Any credit courses offered by the College)

TOTAL REQUIRED FOR THE DEGREE 126 sem. hrs.

* Entrance into this course is permitted upon satisfactory performance on placement examinations.

NEW HAVEN COLLEGE

DESCRIPTION OF COURSES

New Haven College, 1962-1963

Description of Courses



Courses bearing hyphenated numbers, for example, A111-112, are two semesters in length, and the first semester is prerequisite to the second.

Courses bearing single numbers, for example, L 221, are only one semester in length.

Courses designated by letter rather than by number are not of college grade, although they involve class and preparation time equivalent to other courses.

Courses of the 100 level have no prerequisites; 200 level courses have one prerequisite; 300-level have two prerequisites; 400-level courses have three or more prerequisites, or are to be taken in the final two years of a bachelor of science program.

Accounting

A111-112. Introductory Accounting. Credit, 6 semester hours.

This course, which is prerequisite to all other courses in accounting, familiarizes the student with fundamental principles of accounting. This work is supplemented by progress tests, problems, and systematic practice work. The fields of study covered include: interpretation of assets, liabilities, and net worth; preparation of statements; books of original entry; ledgers; and work at the end of a fiscal period.

(Offered also in Spring Semester on a two nights per week basis.)

A113. Industrial Accounting. Credit, 3 semester hours.

(This course cannot be taken by accounting and business administration majors.)

This is a basic course designed to acquaint engineering students with the vocabulary of accounting, the accounting cycle and the presentation of accounting statements.

A221-A222. Intermediate Accounting. Credit, 6 semester hours.

Prerequisite: A111-112

This course is a continuation at a more advanced level of the principles studied in Introductory Accounting. It is intensive and adapted to present-day changes in the accounting profession. The subject matter includes: the corporation, asset valuations, liabilities, installment sales and consignments, analysis and interpretation of financial statements, sources and application of funds, depreciation methods, inventory evaluation, reserves, and surplus analysis. There is considerable practice in the form of problem solutions. Reference is made to the publications of the professional accounting societies.

A223-224. Cost Accounting. Credit, 6 semester hours.

Prerequisite: A111-112

Offered in September of EVEN years. Offered in September of ODD years at Quinpiac College.

This course embraces the study of departmental and process cost accounting, specific order cost accounting, and standard costs. Thorough consideration is given to cost elements of material, labor, and manufacturing expense. Also included is the study of cost estimating, budgets in cost control, cost relationships, and cost reports for use of management. Forms and methods used in standard costs and analyses of variances for operational use are considered. Practical application of the principles studied is given through the working of practice sets and problems.

A 331-332. Advanced Accounting. Credit, 6 semester hours.

Prerequisite: A 221-222.

This is the final general accounting course covering all phases of accounting not previously covered and not considered of a specialized nature. This course is given in two sections, neither section being dependent upon the other. Upon completion of these sections, the student is prepared for advanced study in specialized accounting problems.

A 333-334. Auditing. Credit, 6 semester hours.

Prerequisite: A 221-222, may be taken concurrently.

Offered in September of ODD years. Offered in September of EVEN years at Quinpiac College.

This course includes examination of the financial condition, review of operations, preparation of audit program, audit working papers, and report upon examination of the client's business. The accountant's relationship with the client and the ethics of the profession are thoroughly discussed. A complete laboratory test is worked out to supplement the test study. Recent developments in audit procedure are included, systems in internal check analyzed, comparisons of balance sheets and detailed audits made. A background is developed in the theory of auditing in preparation for the C.P.A. examination.

A 335-336. Income Tax Procedure. Credit, 6 semester hours.

Prerequisite: A 221-222 recommended, A 111-112 required.

This course embraces a practical application of the principles of Federal Income Tax Law to concrete situations. The problems include the preparation of corporation, fiduciary, partnership, and individual tax returns; claims for refunds, credit, and abatement; records, reports, and requirements of Social Security and state and federal unemployment taxes; and the proper accounting procedure for tax records.

A 443. Accounting Systems I. Credit, 3 semester hours.

Prerequisite: A 224. A 332.

Offered in September of EVEN years.

This course deals with the principles and practices applied in developing accounting systems. Such topics are covered as the preliminary survey; principles of internal check; systems for handling cash, receivables, purchases, sales and payrolls; special journals, ledgers, and statements.

A 444. Accounting Systems II. Credit, 3 semester hours.

Prerequisite: A 443.

Offered in February of ODD years.

A continuation of Accounting Systems I in which the principles studied are observed and analyzed through field trips to businesses and institutions which can best demonstrate the various types of accounting systems. The student is taught how to develop and adapt accounting systems according to the needs of different operations.

Art

ART 101-102. Drawing and Painting I and II. Credit, 6 semester hours.

This course is an introduction to the basic fundamentals of drawing and painting. Problems in drawing will alternate throughout the year with painting projects. The student will thus be given time to assimilate his experience in the preceding problem while working in the alternate medium. Drawing will include exercises to develop co-ordination of hand and eye, drawing various objects in correct perspective and study of the human figure, its volumes, shifting axes and action. Special emphasis will be given to the exploitation of line as a means of articulating the structure of forms and space.

ART 111-112. Design I and II. Credit, 6 semester hours.

This is a basic art course in which the student is introduced to the visual elements of art: texture, line, color, shape, and space and the factors which affect their organization in visual design. The study of design is given in an elementary non-representational manner. Emphasis will be given to the study of color.

ART 122. Layout and Printing Techniques. Credit, 3 semester hours.

This course covers the various advertising art techniques, of layout, lettering and design, in relation to printing methods used today in graphic media.

ART 131. Modern Art. Credit, 3 semester hours.

This is a course which seeks to explore the art of the twentieth century in Europe and America, its roots in the past, and its function as an expression of our contemporary civilization.

ART 211. Lettering. Credit, 3 semester hours.

Prerequisite: Art 111.

This course covers the design and execution of basic hand lettering with pen and brush. The student will also study the utilization of hand lettering and type in the design of printed matter. Emphasis will be put on the use of letter forms as an element of visual design.

Business Administration

BA 101-102. Law of Contracts and Business Associations. Credit, 6 semester hours.

This course involves a study of basic principles of the law of contracts, agency, partnerships, limited partnerships, and corporations.

Contracts will involve a study of the formation of contracts, capacity of parties, offer and acceptance, performance, and discharge. Agency will deal with the appointment of agents, the relationship of principal and agent, power of the agent to bind his principal, duties of agent and principal to one another and to third parties.

Business associations will involve a study of the law relating to the formation and operation of the usual types of business organization. Also considered is the legal relationship among the individuals within the business organization as well as their relationship with third parties.

BA 104. Advertising. Credit, 3 semester hours.

This course deals with the basic principles and applications of advertising. Topics covered include: the advertising agency and its place in modern business society, its relation to the marketing process, preparation of advertisements, choice of media, testing and research, layouts, "planning the campaign", consumer testing, product tryouts, etc. The course also takes up the concepts and techniques of copywriting for graphic media advertising, including such problems as ad research and copy approach.

BA 111. Principles of Selling. Credit, 3 semester hours.

This course presents definite techniques and basic principles of selling and how to get along with people. It includes the study of: prospect selection, knowledge of the product, pre-approach and approach, demonstration, meeting objections, close and departure. Desirable personality traits of the salesman are considered. Each student will have opportunities to demonstrate his ability to sell a given product by means of a class demonstration.

BA 112. Principles of Marketing. Credit, 3 semester hours.

A study of the fundamental principles of the flow of goods and services from producer to consumer. Buying, selling, transportation, storage, grading, risk-taking, financing, and supplying market information are all reviewed to determine their importance in the marketing and economic structure.

BA 113. Business Finance. Credit, 3 semester hours.

Prerequisites: A 111, or EC 133, or A 113.

After a brief study of the unincorporated business enterprise, the modern corporation is studied. The topics covered are: basic security types of stocks and bonds, capital structure, promotion, investment banking, government regulation, administration, sources and uses of working capital, expansion, combinations, mergers, refinancing & recapitalization, failure and reorganization.

BA 118. Business Mathematics. Credit, 3 semester hours.

A study of the fundamental mathematical processes involved in business. The subjects included are: fractions, percentages, interest, bank discount, payroll, taxes, financial statements, statistics, graphs stocks and bonds recording sales, cash and trade discounts, mark-up and margins.

BA 119. Office Organization and Management. Credit, 3 semester hours.

This course considers the profession of office supervision and management through the study of the following: functions of the office manager, office organization, departments, methods and systems, costs and budgets, the role of electronic data processing.

BA 131. Public Relations. Credit, 3 semester hours.

This course deals with the main principles of public relations, and how they are applied in specific cases. It shows how the practice of public relations is used by individuals, groups, companies and organizations to gain public understanding and acceptance, and to improve their relations with everyone in a position to affect their welfare. One of the course requirements is a paper evaluating a public relations program.

BA 201. Government Regulation of Business. Credit, 3 semester hours.

Prerequisite: EC 133.

This course deals with an appraisal of public policy toward transportation, trusts, monopolies, public utilities, and other forms of government regulation of economic activity.

BA 216. Business Statistics. Credit, 3 semester hours.

Prerequisite: BA 118.

A course offering a sound foundation in statistical methods as applied in business, government, institutional, and research organizations, as well as in personal use. Major topics include the planning of investigations, sampling, sources and the collection of data, tabulation, ratios, graphs, frequency distribution, measures of central tendency and dispersion, index numbers, time series, seasonal and cyclical movements, trends, correlation, the normal curve, and the statistical report. Practical problems are used to emphasize and impress the textual materials.

BA 221. Law of Sales. Credit, 3 semester hours.

Prerequisite: BA 101-102.

Offered in September of ODD years.

This course is an advanced study of Business Law comprising: bailments; duties and liabilities of bailees, common carriers, and warehousemen; the laws governing the rights of parties engaged in the transfer of personal property. Questions of title, risks assumed, rights of creditors, express and implied warranties, buyers' and sellers' remedies, together with the business background out of which such relations arise are also considered.

BA 222. Law of Commercial Paper and Bankruptcy. Credit, 3 semester hours.

Prerequisite: BA 101-102.

Offered in February of EVEN years.

This course is a study of the Negotiable Instruments Law, dealing with negotiable promissory notes, bills of exchange and bank checks with an analysis of their form and function in commercial transactions. A brief survey of bankruptcy procedure under the federal bankruptcy laws is considered.

BA 302. Technical Sales. Credit, 3 semester hours.

Prerequisites: BA 111-112.

A course in industrial sales covering the techniques and problems involved in such types of industrial purchases as essential staples, machinery and equipment, basic installation and optional products and services.

BA 342. Market Research. Credit, 3 semester hours.

Prerequisites: BA 111, BA 112, BA 216.

The focus of this course is on the use of qualitative and quantitative analysis of the markets in which business operates.

The following problems will be considered: sales analysis, advertising research, product planning and analysis, sources of data and methods of their collection, sampling techniques, methods of tabulation and analysis, methods of organizing and conducting marketing research, budget considerations, etc., outside readings and term reports.

Chemistry

CH 101-102. General Chemistry. Credit, 8 semester hours, with laboratory.

This is an introductory course which deals with elements, compounds, their properties and reactions. Emphasis is placed on accurate laboratory work.

Laboratory & Breakage Fee: \$12.50 per semester.

CH 211-212. Advanced Laboratory Techniques. Credit, 6 semester hours.

Prerequisite: CH 101-102.

This course consists of a laboratory training in the preparation of solutions, volumetric and gravimetric analyses, instrumental analyses, glass-blowing, special equipment, distillation and vacuum techniques, organic preparations and analyses. Visits to research laboratories familiarize the students with various laboratories and provide valuable guidance for choosing a particular position.

Laboratory & Breakage Fee: \$12.50 per semester.

CH 221-222. Engineering Chemistry. Credit, 6 semester hours, with laboratory.

This is a systematic study of the fundamental principles of chemistry and the chemical reactions of the elements and their compounds together with applications chosen for their theoretical and industrial importance.

Laboratory & Breakage Fee: \$12.50 per semester.

Economics

EC 133. Economics. Credit, 3 semester hours.

An introductory course emphasizing the following aspects of macroeconomics and institutional economics: national income, money, banking, Federal Reserve System, taxation, public finance, business cycles, agriculture, labor, international economics, government in the economy, economic growth, and comparative economic systems.

The following aspects of microeconomics are included: basic concepts of pricing, pricing and business policy, supply and demand.

EC 202. Economic History of the United States. Credit, 3 semester hours.

Prerequisite: EC 133.

The development of American economic life in the various stages of agriculture, trade, industry, finance, and labor. The change of economic practices and institutions particularly in the realms of business, banking, and labor is stressed as well as the changing role of government.

EC 204. Engineering Economics. Credit, 3 semester hours.

Prerequisite: EC 133.

A quantitative analysis of applied economics in engineering practice; the economy study for comparing alternatives; interest formulas; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; relationship of accounting to the economy study; review of current industrial practices. Aims to promote logical decisions from the consideration of alternative courses of action.

EC 236. Money and Banking. Credit, 3 semester hours.

Prerequisites: EC 133, and EC 202 or EC 204.

This course deals with the nature and functions of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States, and current problems of monetary policy.

EC 240. Labor Economics. Credit, 3 semester hours.

Prerequisite: EC 133.

A study of the history of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control, problems of security.

EC 442. Economic Thought. Credit, 3 semester hours.

Prerequisites: EC 133, EC 202.

This course describes the development of economic doctrine from mercantilism and Adam Smith to the thinking of modern-day theorists. The emphasis is placed upon the main currents of thought with the applicability to present-day problems. Individual study and reporting are stressed during the semester.

EC 445. Economic Analysis. Credit, 3 semester hours.

Prerequisite: EC 133.

Economic Analysis will stress value and distribution theory. Simple geometric tools and equations, introduction to linear programming and econometrics will be introduced to the student. The analysis is related to actual problems in order to make the analysis more real without diluting the theory. The area will include consideration of market structure, theories of production, nature and behavior of cost, price and output determination under various conditions, theory of factory price and income distribution, wage determination, capital goods and investment decisions, theory of interest, rent, and profits.

Electrical Engineering

EE 220. Electrical Engineering. Credit, 4 semester hours.

Prerequisite: PH 205.

This course covers the principles of direct current and alternating current circuits and magnetic circuits. Construction, characteristics, and applications of direct current and alternating current generators and motors; regulating and control equipment; transformers; distribution of electrical energy; electrical instruments. Construction and characteristics of electron tubes; half-wave and full-wave rectifiers. Theory and laboratory.

EE 222. Elements of Electrical Engineering. Credit, 3 semester hours.

This course cannot be taken for credit by electrical engineering students who have passed EE 224.

Prerequisites: M 111, M 113, PH 212.

The fundamental concepts of electricity and magnetism and their application to electrical circuiting and electromagnetic devices are considered. Electrical measuring techniques and industrial applications of electrical machinery are also pointed out. Problems and equipment demonstrations accompany class assignments.

EE 223-224. Principles of Electrical Engineering. Credit, 6 semester hours.

Prerequisites: PH 212, M 221-222. (M 221-222 may be taken concurrently.)

This course consists of the fundamental concepts of electricity. It includes Ohm's law and Kirchoff's laws, a study of the properties of conductors and insulators, nonlinear resistance circuits, magnetic circuits and fields, induced and generated electromotive force, and the dielectric circuit. A brief survey is made of the a-c circuits, d-c and a-c machines and electronic tubes and circuits.

EE 233. Basic Electronics. Credit, 3 semester hours.

Prerequisite: EE 222 or EE 224.

A study of electrical conduction in vacuum, ionized gases, and semiconductors, and of the characteristics of devices employing these phenomena; the large-signal behavior of these devices in such circuits as rectifiers, clipping and clamping circuits, modulators and demodulators, and class A, B, and C amplifiers.

EE 236. Industrial Electronics. Credit, 3 semester hours.

Prerequisite: EE 222 or EE 233.

Analysis and design of the electronic components used in industrial processes; performance tests on selected electronic apparatus such as power rectifiers, photoelectric controls, magnetic amplifiers, motor controls, voltage regulators, radio frequency heating equipment, resistance welding controls, and introduction to feedback control systems.

EE 252. Illumination. Credit, 3 semester hours.

Prerequisite: EE 222 or EE 223-224.

Offered in February of ODD years.

This course covers the basic concepts of illumination engineering; light sources; photometry; seeing; principles of illumination; illumination calculations; interior lighting; flood lighting; sports, street, highway lighting; interior wiring for light and power.

EE 330. Electrical and Acoustical Measurements. Credit, 3 semester hours.

Prerequisites: EE 223-224.

The course deals with the general problem of measurement of various physical quantities by means of electrical circuits and instruments. Mathematical methods of evaluation of measurements data, including some graphical-, numerical-, and machine-methods.

EE 331-332. Alternating Current Circuits. Credit, 6 semester hours.

Prerequisites: EE 223-224 and M 323 (M 323 may be taken concurrently.)

This course covers the fundamental theory of single phase and poly-phase alternating current circuits, instruments and measurements. The concepts of vector algebra and Fourier analysis are applied to steady-state solutions of AC networks, and differential equations are applied to the transient analysis of circuit elements.

EE 341. Direct Current Machines. Credit, 3 semester hours.

Prerequisite: EE 222 or EE223.

This course includes a review of the fundamental laws of direct current circuits and magnetic circuits; mechanical construction of the d-c machine; magnetic circuits of d-c machines, flux leakage, armature and field windings; generator and motor characteristics; special machines, such as dynamotor, servomotors, Ward-Leonard motorgenerator, rototrol generator, and the amplidyne. Laboratory work is also included.

EE 342. Alternating Current Machines. Credit, 3 semester hours.

Prerequisite: EE 222 or EE 224.

The basic theory of AC circuits and DC machines is combined with electromagnetics in a study of basic AC machinery. Single phase, poly-phase and auto transformers, poly-phase alternators, induction motors and two phase servomotors, paralleling alternators and single phase motors of various types are covered. Application of the various devices are considered. Laboratory work in this equipment supplements the lectures.

EE 343-344. Electrical Machinery. Credit, 8 semester hours. (With laboratory periods each semester).

Prerequisite: EE 220.

The basic theory of AC circuits and DC machines is combined with electromagnetics in a study of basic AC machinery. Single phase, poly-phase and auto transformers, poly-phase alternators and induction motors, Ward-Leonard and amplidyne systems and feedback servomotors. Applications of the various devices to servomechanisms are considered. Laboratory work in this equipment supplements the lectures.

EE 347-348. Electronic Engineering. Credit, 6 semester hours.

Prerequisite: EE 220 or EE 331-332. (EE 331-332 may be taken concurrently.)

This course is largely concerned with the discussion of basic circuits making up more complex electronic devices. A large part of the course is assigned to the analysis of apparatus used in practice, both in industry and communications. Magnetic, audio and servo amplifiers as well as high-frequency systems will be analyzed during the second semester.

EE 437-438. Electric Power Transmission. Credit, 6 semester hours.

Prerequisite: EE 331-332.

Offered in September of EVEN years.

This course considers the engineering and economics of power systems as well as generating equipment, metering, switching and protective devices, types of transformers and transformer connections, transmission line calculations, system protection, interconnected power systems and controls.

EE 441-442. Electronic Computers. Credit, 6 semester hours.

Prerequisites: EE 347-348 and M 202 or M 324.

This course includes a study of the systems for solving complex mathematical problems by electronic techniques; the fundamental properties of differential analyzers, analog and digital computers with particular emphasis on the logical structure of components (such as adders, multipliers, counters, registers, etc.) and the interrelations necessary for fully automatic operations. Laboratory work is also included.

EE 445-446. Communications Circuits. Credit, 6 semester hours.

Prerequisites: EE 347-348 and M 202 or M 324.

Offered in September of ODD years.

This course includes the analysis of communication circuits and the design of the components of communication systems, performance testing of receivers, transmitters, power amplifiers and other elements of telephone, carrier current, telemetering, radio, microwaves and television equipment.

EE 450. Transistor Electronics. Credit, 3 semester hours.

Prerequisite: EE 331-332.

This course includes the theory of semi-conductors, and the properties of semi-conductor devices; characteristics of point contact and junction transistors; the four-terminal networks, equivalent circuits, stability, power gain and cascading problems. Low frequency amplifiers. High frequency circuits, high frequency amplifiers. Application of semi-conductor devices in amplifiers, oscillators, magnetic amplifiers and computers.

EE 451-452. Engineering Analysis. Credit, 6 semester hours.

Prerequisites: M 323-324.

A course designed to give the student a working knowledge of the principal mathematical methods used in advanced engineering and physics. Topics include methods of solving linear differential equations, introduction to non-linear equations, Bessel's functions, partial differential equations, Fourier series, vector analysis and matrices, introduction to the complex variable, Laplace transforms and the solution of electromechanical problems by means of analogies. Emphasis is placed on a wide range of formal applications of mathematics rather than on the logical development.

EE 455-456. Servomechanisms and Feedback Control Systems. Credit, 6 semester hours.

Prerequisites: EE 451-452 or M 324.

This course includes the differential equations of dynamical systems, analogues, linearization techniques, block diagram representation, concept of transfer function, classical servomechanisms, transient analysis and synthesis, frequency spectrum analysis and synthesis, stability criteria, transfer loci, compensation methods, use of inverse plane. Bode plot, straight line approximations, gain-phase relationships, Nyquist plots and root-locus technique. Correlation between root-locus and frequency loci, compensation using root-locus, multiple loop systems, block diagram reduction techniques, multipole systems, and the use of describing function for linearization.

EE 458. Servomechanism Components. Credit, 3 semester hours.

Prerequisite: EE 455.

The course covers the design and testing of overall feedback control systems and recording instruments, including direct coupled vacuum tube and transistor amplifiers, modulators, magnetic amplifiers, transducers, resolvers, synchros, servomotors, and hydraulic assemblies.

EE 461. Waves and Fields. Credit, 3 semester hours.

Prerequisites: EE 331-332 and M 202 or M 324.

This course covers the study of basic electromagnetic theory as related to the static fields of electric charges and the magnetic fields of steady electric currents. Included are fundamental field laws; Maxwell's equations; energy distributions; scalar and vector potentials; method of images; boundary relations; magnetization; polarization; time varying electric and magnetic fields; field plotting. Vector mathematics is used in the mathematical analysis.

English

E A. Basic Grammar. One semester. No credit.

The objectives of this course are: first, to teach the fundamental principles upon which good English is based; second, to give practical experience in the use of themes, recitations, notebooks, and conferences; and to train in the use of dictionary. Special work is prescribed for those whose preparation is inadequate and for those who show need of review.

E B. Reading Laboratory. One semester. No credit.

This course aims at helping the student to read faster and to increase comprehension. The objectives are more effective study habits, increased vocabulary, the enjoyment of reading and the development of independent thinking. The course includes reading and exercises in the text, vocabulary exercises, supervised reading for speed, training films and discussion.

E 107. Speech. Credit, 2 semester hours.

A basic course to develop the habits of orderly and communicative presentation of ideas. Analysis, organization, and delivery of original speeches, as well as informal, extemporaneous, and impromptu speaking.

E 113. English Composition. Credit, 3 semester hours.

Prerequisite: Satisfactory performance on English Placement Examination, either at admission or at the completion of EA Basic Grammar.

This course is designed primarily to help students learn to write by writing—to develop the ability to organize thoughts quickly and effectively, to write with speed and facility, and to use simple written English.

E 114. Speech. Credit, 3 semester hours.

This course serves as an introduction to the principles of speech. The objectives are: to develop in the student proficiency in the use of vocal and bodily aids in various speaking situations, and to help the student gain confidence and fluency when speaking extemporaneously, as in group discussions, or in everyday conversation. Recordings are used for self-analysis and criticism.

E 118. Modern Literature. Credit, 3 semester hours.

This course is designed to give the student a general understanding of the various kinds of literature being written today and to acquaint him with representative samples of recent fiction, biography, essays, poetry, and drama. The reading and classroom discussion will be supplemented by lectures which will attempt to provide certain theories of criticism and to increase the student's enjoyment and appreciation of literature.

E 201-202. Humanities. Credit, 6 semester hours.

Prerequisite: E 113.

An approach to man's perennial search to find meaning for his place in the universe and perspective for his systems of knowledge. Dealing with selected intellectual, ethical and aesthetic problems, the student is introduced to some classics in literature, history, philosophy and art which provide the foundations of contemporary culture. Extensive reading in primary sources is expected.

E 206. English Composition and Literature. Credit, 3 semester hours.

Prerequisite: E 113.

This course aims to increase the student's understanding of English as a means of communication and to increase his skill in reading and writing. Training is given in the analysis and interpretation of literature.

E 220. Technical Report Writing. Credit, 3 semester hours.

Prerequisite: E 113.

Included in this course of writing for the engineering, management and business student is the study and analysis of the professional scientific paper, the preparation of re-

ports on the technical and semi-technical level and an introduction to the principles of business letter writing. Emphasis is placed on the study and writing of the internal plant memorandum and report.

Foreign Languages

FR 101-102. Elementary French. Credit, 6 semester hours.

Offered in September of ODD years.

An introduction to French stressing pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. *Not open to students who offer for college entrance more than one year of high school French.*

FR 201-202. Intermediate French. Credit, 6 semester hours.

Offered in September of EVEN years.

Prerequisite: French 101-102 or equivalent.

Conversation based on the reading of modern prose texts; drill in written and oral self-expression; a review of the principles of grammar.

RU 101-102. Elementary Russian. Credit, 6 semester hours.

An introduction to Russian stressing pronunciation, aural comprehension, and conversation; instruction in the fundamental principles of grammar; training in reading comprehension.

SP 101-102. Elementary Spanish. Credit, 6 semester hours.

Offered in September of EVEN years.

An introduction to Spanish stressing pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. *Not open to students who offer for college entrance more than one year of high school Spanish.*

SP 201-202. Intermediate Spanish. Credit, 6 semester hours.

Offered in September of ODD years.

Prerequisite: SP 101-102, or equivalent.

A more advanced course for students with two years of high school Spanish or one year of college Spanish. Emphasis is on conversation, with advanced study of grammar and composition. Works of prominent Spanish-American authors will be read.

Industrial Engineering

IE 114. Management Survey. Credit, 3 semester hours.

This is an introductory course in management. It introduces the student to all the major functions of industry, their interrelationship, and how they are brought together through organization. Thus the student receives instruction in the preliminaries of methods, cost, production control, product development, finance, physical facilities, quality control, plant engineering, industrial relations, job evaluation, sales, advertising, budgets, and records.

IE 119. Industrial Safety and Hygiene. Credit, 3 semester hours.

This is a basic course in industrial accident prevention and industrial hygiene and covers: managerial accident prevention, functions and responsibilities; injury data development, usage, and validity; machine guarding techniques and guard development, including point-of-operation, drives; personal protective equipment; fire prevention and control, including flammable solvents, dusts and their characteristics; electrical hazards; hand tools, power and manual; employee training; communications; hazard analysis; accident investigation. Industrial hygiene problems caused by solvents, dusts, noise, radiation are studied as well as bodies, laws and catastrophe hazards.

IE 123. Programming and Data Processing. Credit, 3 semester hours.

The Programming area includes the preparation of block diagrams and the conversion of the detailed block diagrams into machine instructions. The input and output format is specified and the memory is allocated in order that the program can be efficiently expressed in the language of the machine. The student is introduced to the use of the computer to examine in coding (automatic programming), regional or symbolic programming, symbolic assembly, programming system, debugging, tracing routines, proof and conversion. Includes an introduction to automatic data processing and machine language.

IE 133. Cost Control. Credit, 3 semester hours.

Prerequisite: A 112 or A 113 recommended.

A large percentage of the cost of a product is incurred by the supervisors and foremen through whose departments the product passes on its way from raw material to finished state. To control and reduce this cost is an important part of their job. Only if they understand all the factors comprising such costs can they accomplish this end. This course will familiarize them with the elements of cost necessary to control, stressing particularly the indirect or overhead elements—their measurement and control.

IE 134. Production Control. Credit, 3 semester hours.

The instruction stresses the basic principles that govern production control in an industrial plant. These principles are worked out in the problems of procuring and controlling materials, in routing, scheduling, and dispatching. The intent of the course is to familiarize the student with the use of the most up-to-date methods in this field, including visual control systems.

IE 241. Methods and Motion Study. Credit, 3 semester hours.

Prerequisite: IE 114.

The purpose of this course is to develop an acute awareness of motion economy and an understanding of the principles of methods analysis in industrial operations. Each student is responsible for a project based on a practical shop operation. Through analysis, he will demonstrate the principles of motion economy. Methods analysis techniques include operations analysis, man-machine, gang and operator process charts. Motion study techniques include micromotion filming and analysis of student projects memomotion filming and synthetic basic motion study analysis. Job analysis and job evaluation techniques are introduced and applied to actual industrial labor problems.

Methods Laboratory and Breakage Fee \$5.00

IE 342. Work Measurement. Credit, 3 semester hours.

Prerequisite: IE 241.

A basic course in the measurement of work by the stopwatch and synthetic basic motion systems. Actual shop operations are analyzed in the laboratory for elemental breakdown. Performance rating is practiced from films and from actual shop operations. The various techniques of applying allowances and developing the standard time are practiced. Standard data is developed from laboratory studies and applied to formula construction and application. Work sampling techniques are demonstrated and applied. Establishing of standards on indirect work, the extensive application of time standards and a survey of significant wage payment plans are also an integral part of the course.

IE 346. Statistical Analysis. Credit, 3 semester hours.

Prerequisite: M 202 or M 324.

This course provides an introduction to the application of statistical techniques to industrial and engineering problems, probability and distribution theory, measures of central tendency and dispersion in relation to population and samples; as well as applications of algebraic methods in industrial practice including game theory, mathematical programming, and advanced statistical methods.

IE 351. Synthetic Motion—Time Systems. Credit, 3 semester hours.

Prerequisite: IE 241.

This is essentially a course in the Methods-Time-Measurement and the Elemental Time Standards systems of work measurement. The theory and technique learned in the

classroom are practiced in the laboratory in measuring actual factory operations. These applications are extended to illustrate standard data usage, standard cost methods and the principles of motion economy.

IE 435. Statistical Methods (with Lab.) Credit, 4 semester hours.

Prerequisite: M 323.

This course consists of lecture and laboratory work and an introduction to the application of statistical techniques to industrial and engineering problems, probability and distribution theory, measures of central tendency and dispersion in relation to population and samples: statistical inference problems classified in terms of (1) estimation procedures, (2) tests of hypotheses, and (3) confidence intervals: differentiation of Type I and Type II errors and their significance for problems of statistical inference.

IE 436. Quality Control. Credit, 3 semester hours.

Offered in Spring of EVEN years.

Prerequisite: IE 435.

This course covers economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; co-ordinating specifications, manufacturing, and inspection; measuring process capability using inspection data to regulate manufacturing processes; control charts; selection of modern sampling plans.

IE 443. Factory Planning. Credit, 3 semester hours.

Prerequisite: IE 342.

Factors in plant location, design and layout of equipment. The basic principles of obtaining information essential for carrying out such investigations. This is a survey course which also covers briefly such practices as material handling, storage and storeroom, maintenance, and service departments in modern factories.

IE 501. Data Processing. Credit, 3 semester hours.

Prerequisite: IE 346 or IE 435.

This course is an introduction to the new field of business computers and is designed to give a broad view of magnetic storage machines and the stored program concept. Class will study operational features of a number of types and laboratory work in programming and program testing will be performed on a late model, medium size business computer, through in-plant visitations.

IE 502. Operations Research. Credit, 3 semester hours.

Prerequisite: IE 123 or IE 501.

The Operations Research area is oriented to various mathematical and near-mathematical methods for getting answers to certain kinds of business problems. The following areas are studied: simulation including Montcarlo, Queuing, the flood method for assigning jobs, the transportation method, and linear programming including the simplex method with both algebraic solution and tableaux.

IE 504. Laboratory—Thesis. Credit, 3-5 semester hours.

Advanced laboratory testing and special problems. The student works on problems of his own selection which have been outlined by him and have received approval. This may be in the form of a semester thesis or a series of original experiments.

IE 507. Systems Analysis. Credit, 3 semester hours.

Prerequisite: IE 123.

The Systems Analysis area is concerned with the flow-of-information kind of systems analysis and the complex product-scheduling kinds of systems analysis. The areas covered are computers and integrated systems, procedures, systems analysis and development, program evaluation, review techniques, forms and filing.

IE 510. Business Games. Credit, 3 semester hours.

Prerequisite: IE 507.

The Business Games area gives the student the opportunity of correlating his entire course of study in a management simulation framework. These training games make use of simulation models that explore specific management areas in depth. The problems of these games are as follows: (1) to serve as a framework for training sessions in basic management principles; (2) to serve as an introduction to the problems of manufacturing management; (3) to serve as a focal point for management development discussions of long range planning and decision assisting tools; (4) to show the student the use of modern electronic computer methods.

IE 512. Management Seminar. Credit, 3 semester hours.

Prerequisite: IE 507.

A senior seminar course involving problems in transportation, budgeting, wage and salary administration, and other selected problems.

Journalism

J 101. Journalism. Credit, 3 semester hours.

This course begins with a survey of journalism designed to acquaint students with what the profession offers. The American newspaper as a social institution and a communication medium will be studied, together with the reporting of public affairs and elementary editing.

J 201. News Writing and Reporting. Credit, 3 semester hours.

Prerequisite: J 101, E 113.

Included in this course are the elements of news, the style and the structure of news stories, news gathering methods, copyreading and editing. The course offers some practical experience in reporting, writing and editing.

J 301. Advanced Journalism and Feature Writing. Credit, 3 semester hours.

Prerequisite: J 201, E 113.

This course covers the theory of copy-reading, editing, feature writing, headline writing, and reporting. Practical problems in feature writing, reporting and editing are emphasized.

Mathematics

M A-B. Basic Mathematics I. No credit.**Meets 2 nights a week per semester.**

This course in mathematical methods represents the fundamental operations of algebra and the application of these operations to problems. Topics discussed include the theory of equations, factoring, and fractions. In geometry the concept of proof is emphasized and applied, and the properties of the triangle are considered.

M C-D. Basic Mathematics II. No credit.**Meets 2 nights a week per semester.**

Prerequisite: M A-B or equivalent.

The study of algebra is continued in this course and includes the following subjects: the quadratic equation, ratio and proportion, variation, and the trigonometry of the right triangle. In geometry the circle is discussed and studied, and consideration is given to similar figures and areas.

M 101. College Algebra and Calculus. Credit, 4 semester hours.

Prerequisite: High School mathematics, through trigonometry.

This course reviews the fundamental relations in algebraic operations, analytic geometry, simultaneous equations, determinants, quadratic equations, complex quantities, partial fractions, inequalities, points graphs, rectangular and polar coordinates, and introduces the formal differentiation and integration of the calculus.

M 102. Differential Calculus. Credit, 4 semester hours.

Prerequisite: M 101.

This course includes the fundamental notions of the calculus, differentiation and integration of algebraic functions, differentials, maxima and minima. Applications are made to simple problems in geometry and mechanics, such as the determination of velocity, accelerations, areas, volumes, and pressures. The analytic geometry of the straight line and of the conic sections is introduced as an attribute to the calculus.

M 108-109. Introductory Mathematics. Credit, 6 semester hours.

A survey course suited to the needs of the student who needs an introductory course in mathematics. First semester: selected topics from college algebra and geometry. Second semester: selected topics from analytic geometry and an introduction to trigonometry.

M 111. College Algebra. Credit, 3 semester hours.

Prerequisites: M C-D or equivalent.

The fundamental operations of algebra are thoroughly reviewed and various topics such as the function concept, variation, synthetic division, complex numbers and determinants are studied. Special emphasis is placed on the solution of verbal problems.

M 113. Trigonometry. Credit, 3 semester hours.

Prerequisites: M C-D or equivalent.

This course is devoted entirely to the study of trigonometry. The topics studied include trigonometric functions, fundamental relations, solutions of right and oblique triangles, trigonometric reductions, angular measure, graphs of the functions, composite angles, inverse functions, logarithms and the use of the slide rule.

M 201. Integral Calculus. Credit, 4 semester hours.

Prerequisite: M 102.

This course includes integration, geometrical applications to lengths of plane curves, areas, volumes of solids; mechanical applications to work, pressure, centers of gravity, and moments of inertia; analytical geometry of three dimensions; double and triple integration with application to areas, volume, moments of inertia, parametric equations and centers of gravity.

M 202. Differential Equations. Credit, 3 semester hours.

Prerequisite: M 201.

This course includes Infinite series; Fourier series; partial differentiation; and line integrals. The solution of ordinary differential equations including the principal types of first and second-order equations, simultaneous equations, and linear equations with constant coefficients, and the introduction to operational methods by means of the Laplace transformation.

M 221. Calculus and Analytical Geometry. Credit, 3 semester hours.

Prerequisites: M 111 or 114 and M 113.

This course covers the necessary fundamentals from analytical geometry. Differentiation of algebraic, trigonometric and other transcendental functions, maxima and minima, rates, velocity, acceleration and law of the mean.

M 222. Differential and Integral Calculus. Credit, 3 semester hours.

Prerequisite: M 221.

In this course, the differentiation and integration of the power function are studied concurrently and are applied to problems in physics and science. These include areas, volumes of revolution, centroids and moments of inertia of planes and solids of revolution, and differentials.

M 227-228. Mathematics for Computers I and II. Credit, 6 semester hours.

Prerequisites: M 108-109.

A two-semester course designed to improve the student's analytical faculties and prepare him for subsequent courses in statistics and managerial economics. First semester: theory of sets; introduction to finite probability. Second semester: mathematical concepts based on the differential and integral calculus as related to business problems.

M 323. Advanced Mathematics for Engineers I. Credit, 3 semester hours.

Prerequisite: M 222.

This course provides an opportunity for students to follow through to completion many of the topics introduced in Differential and Integral Calculus and to study the applications of those topics. The course is further designed to provide a better mathematical background for the study of advanced engineering courses by including partial differentiation, multiple integration, infinite series and an introduction to ordinary differential equations.

M 324. Advanced Mathematics for Engineers II. Credit, 3 semester hours.

Prerequisite: M 323.

This course continues the study of some of the advanced mathematical techniques used in the solution of engineering problems. Included will be ordinary and partial differential equations, Fourier series, vector analysis, an introduction to the functions of a complex variable by means of the Fourier integral and the Laplace transformation.

Mechanical Engineering

EM 101. Engineering Drawing. Credit, 2 semester hours.

This is an elementary course in engineering drawing designed to teach the use of instruments, the fundamental principles of projection, drafting room standards and conventions, lettering, selection and use of scales, orthographic projections, revolutions, developed surfaces, intersections and auxiliary views, and the making and dimensioning of complete working drawings of simple machine parts.

EM 102. Drawing and Descriptive Geometry. Credit, 2 semester hours.

Prerequisite: EM 101 or equivalent.

This course is a continuation of Engineering Drawing but includes the basic principles of space relationships with emphasis on the solution of engineering problems. Principal views; auxiliary views, oblique views, line and plane problems, revolution, surfaces and developments, surfaces and intersections, and warped surfaces, are studied.

EM 123. Engineering Materials. Credit, 3 semester hours.

A survey of the principal engineering materials of industry including the properties and design characteristics of cements, wood, ceramics, glass, and plastics. In general, the avenue of approach is designed to assist engineers who also must select metals and alloys for engineering use. Suitable laboratory work is included.

EM 124. Mechanical Processes. Credit, 3 semester hours.

This course is designed to acquaint the student with the basic metal cutting processes. Machining properties of metals are developed both with respect to single and multiple point metal cutting tools as well as the adaptability of standard and special machine tools employed by the metal industry. The lathe, milling machine, planer, shaper, saw and other allied machine tools where metal is removed by chip formation are specifically covered. Simultaneously, the selection and application of basic cutting tool materials is developed for each basic machine. The approach is planned to enable the engineer to choose or substitute several basic machine tools for specific applications.

EM 221. Mechanics—Statics. Credit, 3 semester hours.

Prerequisites: M 221-222 and PH 211.

This course covers the algebra of vectors, the composition and resolution of forces; equilibrium of force systems; principle of virtual work, potential energy, stability; distributed forces, centroids, moments of inertia, hydrostatics; friction effects in statics;

elementary theory of structures, method of joints, sections; shear force and bending moment; flexible cables; vector methods applied in three dimensional problems.

EM 234. Mechanics of Materials. Credit, 3 semester hours.

Prerequisite: EM 221.

This course considers the theory of stress and resistance of materials; stress distribution and riveted joints, shafts, beams, and columns; and principal stresses.

EM 322. Mechanics—Dynamics. 3 semester hours.

Prerequisite: EM 221.

A study is made of vector calculus and the application of the principles of dynamics to the analysis of special topics in machines, such as the effect of inertia, flywheel design, balancing, governors, and gyroscopic effects. An introduction to vibration and critical speeds is presented.

EM 331-332. Thermodynamics. Credit, 6 semester hours.

Prerequisites: PH 221-222, M 221-222.

This course begins with the study of fundamental concepts; transformations of energy; the first and second laws of thermodynamics; processes and cycles of gasses and vapors. With this groundwork established, the course proceeds to deal with various applications such as: compressors, gas turbines, jet engines, internal combustion engines, steam turbines and refrigeration systems.

EM 333-334. Machine Design. Credit, 6 semester hours.

Prerequisites: EM 221, EM 234, and EM 322.

Offered in September of EVEN years.

The first semester of this course consists of a study of the elements of design. The second semester considers the analysis and design of such elements as fastenings, bearings, gears, shafts, clutches, pulleys, and cams. Some machine parts are studied from the standpoint of kinematics, and their motions are analyzed.

EM 343. Mechanisms (Kinematics). Credit, 3 semester hours.

Prerequisites: EM 221 and M 221-222.

Offered in September of ODD years.

Linkages comprising mechanisms are studied as well as the graphical analysis of displacements, velocities and acceleration in mechanisms, including the use of instantaneous centers. Design of cams is considered, and an analysis is made of belt drives, gear profile action, and gear trains.

EM 335-336. Tool Design. Credit, 6 semester hours.

Prerequisites: EM 111-112, EM 124, and EM 221.

Offered in September of ODD years.

The objective of this course is to present and develop the basic techniques of tool design through lectures, class discussions, and student design problems. Major topics considered are: methods analysis, drill jib design, tolerances and allowances, cutting tools, die design, gages and gaging policies, milling fixtures, turret lathe tooling, and cam designs for automatic screw machines.

EM 405. Fluid Mechanics. Credit, 3 semester hours.

Prerequisite: EM 322. Fall only.

Fundamentals, fluid statics, viscosity, flow of an ideal fluid, flow of a real fluid, dimensional analysis, measuring devices, flow in pipes, open channel flow, dynamic action of fluids, and centrifugal pumps.

EM 416. Heat Transfer. Credit, 3 semester hours.

Prerequisites: EM 405 and EM 331-332.

Conduction, convection, and radiation as different types of heat transfer. Steady- and unsteady-state conduction problems in solids. Solutions will be developed by analytical, numerical, and graphical methods. Dimensional analysis of convection problems; analogy between heat transfer and fluid friction. Heat transfer in tubes and on external surfaces. Combined conduction and convection effects. Heat exchangers and cooling fins.

EM 422. Mechanics of Vibration. Credit, 3 semester hours.

Prerequisites: EM 322 and M 324.

The objective of this course is to present and develop the mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems; damping; free and forced motion; resonance, vibration isolation; matrix method; Rayleigh's principle.

EM 441-442. Advanced Machine Design. Credit, 6 semester hours.

Prerequisites: EM 333-334.

Offered in September of ODD years.

Following a review of the elements of machine design studied in the first year, complete designs are individually selected and developed by the student. Advanced problems, such as balancing and critical speeds, are considered the latter part of the year.

EM 445-446. Tool Engineering. Credit, 6 semester hours.

Prerequisites: EM 234, EM 322, and EM 335-336.

Offered in September of EVEN years.

This course will consider the interrelationships of tool design with the pertinent elements of tool engineering such as: planning, processing, estimating, and tooling costs. Student tool design work will be of a group nature entailing the complete planning and designing necessary to manufacture machine parts and die work. Major topics considered are: locating and clamping theory, tooling economics, tool estimating, and process planning.

Metallurgy

MT 219. Physical Metallurgy. Credit, 3 semester hours.

Prerequisites: PH 211-212 and CH 201-202. (CH 201-202 may be taken concurrently.)

A survey of the principal metals used as engineering materials with concentration on the properties and applications of ferrous alloys. Attention is directed to the production of these materials, methods of fabrication and typical properties of the finished product. This course is designed to offer the student a complete coverage of the elements of physical metallurgy. In general, the avenue of approach is designed to assist engineers who must select metals and alloys for engineering use.

MT 220. Metallography. Credit, 3 semester hours.

Prerequisite: MT 219.

In this course the relations between equilibrium diagrams, heat diagrams, structures, and physical properties of both ferrous and non-ferrous metals and alloys are stressed. Attention is given to pyrometric measurements, automatic temperature control apparatus, gas and electric heat-treating furnaces, and quenching methods and media, and preparation of metallurgical specimens for microscopic examination.

MT 324. Nuclear Metallurgy. Credit, 3 semester hours.

Prerequisites: MT 219 and PH 315.

The content of this course will include a general discussion of nuclear reactors, production and fabrication of uranium metal and alloys, metallurgy of zirconium, thorium, plutonium, beryllium, liquid metals used in nuclear reactors, fabrication of reactor components, non-destructive materials testing and the radiation damage of materials.

MT 331. Non-ferrous Metallurgy. Credit, 3 semester hours.

Prerequisite: MT 220.

The physical metallurgy of aluminum, magnesium, copper, nickel, zinc, lead, tin and their alloys is covered by lecture, discussion and laboratory work. Melting, alloying, casting, extruding, rolling, drawing, and heat treatment of the metals are studied with emphasis on the effects of variables and reasons therefor. Typical mill and service difficulties are analyzed in light of the specific fundamental principles involved.

MT 342. Steels and Their Heat Treatment. Credit, 3 semester hours.

Prerequisite: MT 220.

The course covers the principal grades of carbon and alloy steels employed for press, structural, automotive, tool and die as well as stainless applications. Cast irons are also included as competitive material. The fundamentals such as the iron-carbon phase diagram, transformation diagrams, grain size and hardenability are studied. The lectures and discussions are supplemented by laboratory work where the student is trained to recognize typical microstructures of steel as affected by heat treatment.

Music

MU 102. Music Analysis and History. Credit, 3 semester hours.

Development of music from its early stages to its present form, including the contributions of the great masters to musical evolution; appreciation of music.

MU 105-106. Chorus. Credit, 2 semester hours.

Open to all students interested in group singing. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. Two hours a week.

Orientation

O 101. Introduction to Engineering. Credit, 1 semester hour.

A survey to introduce the student to specific obligations of engineering students, to the broad concepts of engineering in several areas and to appraise both the human and technical aspects. Slide-rule instruction included. Required of all first-year engineering students. Satisfactory completion is required for graduation.

O 111. Orientation and Counseling. Credit, 1 semester hour.

This is essentially a guidance activity through which students are assisted in 1) making the most satisfactory adjustment to college life and study, 2) establishing intelligent long-range vocational goals for themselves, and 3) conferring with their faculty advisors on matters of curriculum and scheduling. This course is required for graduation.

Personnel Supervision

PS 223. Personnel Administration. Credit, 3 semester hours.

Prerequisites: IE 114 and P 111.

The aim of this course is to provide a foundation in fundamental concepts and a general knowledge of techniques in the administration of personnel relations.

The course covers such subjects as the nature of personnel administration, the handling of personnel problems, employee attitudes and morale. Such techniques of personnel administration as recruitment, interviews, placement, training, employee rating as well as wage policies and administration are dealt with. In order to secure breadth and depth in the approach to personnel problems, simple case studies are used at appropriate points throughout the course.

PS 225. Human Relations in Industry. Credit, 3 semester hours.

Prerequisite: PS 223.

This course continues the study of human relations begun in PS 223 with accent upon the individual's relation to his co-worker. Basic psychological concepts such as motivation, personality, morale, etc. establish the groundwork for discussion within the class of the case studies dealing with associates, subordinates and superiors.

PS 242. Conference Leadership. Credit, 3 semester hours.

Prerequisite: PS 223.

This course is designed to accomplish two main objectives: (1) study in the principles and problems peculiar to conducting business conferences, training conferences, or union-

management discussion and (2) practice in conference leadership. Original and creative work is required in the subject matter of the practice conferences. The student may meet this requirement by the completion of a research project in some area of his previous study, or by submitting adequate conference plans based upon practical experience and research on his job.

PS 244. Management-Labor Relations. Credit, 3 semester hours.

Prerequisite: PS 223.

This course aims to present the problems involved in the relations of management and labor. It begins with a history of the labor movement, then considers the intervention of government in labor relations, and explains the legal framework within which plant practices evolve. The discussion of current practices in negotiation, in grievance handling, and in the settlement of disputes is designed to bring out a point of view which may contribute to a greater stability in relations.

Philosophy

PHIL. 111. Introduction to Problems of Philosophy. Credit, 3 semester hours.

An introduction to reflective thinking on such central issues of human life as man's place in the universe, how we discover truth, the nature of beauty and the good, and the basis of moral choices. Ideas of a few major philosophers from Plato to Dewey will be presented. Stimulation of individual clear thinking upon life's most vital problems will be emphasized in discussion.

PHIL. 113. Introduction to the History of Philosophy. Credit, 3 semester hours.

Offered in September of EVEN years.

The purpose of this course is to instruct the student in the traditions of philosophic thought in the Western cultural heritage.

A chronological development beginning with Pre-Socratic thinkers and coming down to Kant and Hegel is considered. The thoughts of individual men such as Aristotle, St. Thomas, Spinoza, Kant, and others are studied in their important aspects and related to surrounding circumstances. By this means, major philosophic attitudes are outlined.

PHIL. 222. Ethics in a Changing Society. Credit, 3 semester hours.

Prerequisite: PHIL 111 or 113.

Offered in February of ODD years.

A constructive appraisal of the major ethical systems in the framework of the problems of contemporary society. Ethical norms which point to the goals and ends of life and their relation to the issues of science, business, the professions and other human activities are examined in problem studies.

PHIL. 224. Logic and Scientific Method. Credit, 3 semester hours.

Prerequisite: PHIL. 111 or PHIL. 113.

Offered in February of EVEN years.

The purpose of this course is to introduce the student to the formal rigors of deduction, warranted induction, and scientific description, so far as they bear on the theory, application and limits of scientific method.

Class procedure consists of developing the main problems in the logic science, presenting main points via examples, and discussion of applications.

Physical Education

PE 111-112. Physical Education. No credit.

Includes units in sports, rhythms, physical fitness tests, and exercises. The objective of the work is acquaintance with a wide variety of activities. Basic course required of all freshmen.

Physics

PH 106. Analytical Physics I. Credit, 3 semester hours, with laboratory.

Prerequisite: M 101 (which may be taken concurrently).

Mechanics and heat, statics, kinematics; Newton's laws; work, energy and power; conservation of momentum; circular motion; rotational dynamics; heat and energy; kinetic theory.

Laboratory and breakage fee: \$5.00.

PH 201-202. General Physics. Credit, 6 semester hours, with laboratory.

Prerequisites: M 108-109 or equivalent.

This is a basic course in physics for technical students with lectures and demonstrations. Attention is paid to the basic principles of physics including mechanics, motion, energy, electricity, heat, sound optics. The course stresses use of the slide rule, applied mathematics and graphical methods of presentation and analysis.

Laboratory and breakage fee: \$5.00.

PH 205. Analytical Physics II. Credit, 4 semester hours, with laboratory.

Prerequisite: PH 106 or PH 201-202.

Electricity and Magnetism. Electrostatics; direct currents; magnetic effect of a current, electrical instruments; induced emf; inductance and capacitance; simple harmonic motion; physical basis for a-c circuits and basic electronics are studied.

Laboratory and breakage fee: \$12.50.

PH 206. Analytical Physics III. Credit, 4 semester hours, with laboratory.

Prerequisite: PH 205.

Sound, Light, and Atomic Physics. Fundamentals of wave motion; sound; geometrical optics; physical optics; radiation; relativistic mass-energy; electrons, photons and their interactions; atomic structure; nuclear structure and reactions are studied.

Laboratory and breakage fee: \$12.50.

PH 221. Engineering Physics. Credits, 3 semester hours, with laboratory.

Prerequisite: M 113. (M 221 may be taken concurrently.)

This course serves to introduce the student to scientific and analytical methods. Topics covered include the elements of statics, dynamics, and the mechanics of solids, liquids, and gases, thermometry, expansion, calorimetry, change of state, mechanical equivalent of heat, transmission of heat, and introduction to thermodynamics.

Laboratory and breakage fee: \$12.50.

PH 222. Engineering Physics. Credit, 3 semester hours, with laboratory.

Prerequisite: M 113. (M 221 may be taken concurrently.)

This is an introductory course in magnetism and electricity which includes permanent magnetism, electrostatics, Ohm's law, Kirchoff's laws, Ampere's law of magnetic force, Faraday's law of electrolysis, magnetization of iron, the magnetic circuit, reactions between currents and magnetic fields, the principles of measuring instruments, and a brief study of acoustics. Topics in light include reflection, refraction, mirrors, prisms, lenses.

Laboratory and breakage fee: \$12.50.

PH 323. Modern Physics. Credit, 3 semester hours, with laboratory.

Prerequisite: PH 222 and M 221.

This course is a survey of atomic and nuclear physics, atomic structure, nuclear properties, radioactivity and nuclear fission.

Laboratory and breakage fee: \$12.50.

PH 315. Nuclear Physics. Credit, 3 semester hours.

Prerequisite: PH 212 or PH 323.

This course includes a survey of the developments in contemporary theories of atoms, molecules, matter and radiation; introduces the student to basic concepts necessary to the understanding of the properties of nuclear particles, natural and artificial radioactivity, nuclear disintegrations, cosmic rays, mesons and the application of nuclear phenomena to some practical problems.

Psychology

P 111. General Psychology. Credit, 3 semester hours.

This course is designed to give the student a general knowledge of the important principles of human behavior. Topics included are: motivation, emotion, learning, personality, intelligence, etc. The utilization of psychological knowledge in relation to everyday human activities will be emphasized.

Science

SC 111-112. Modern Science. Credit, 6 semester hours.

A survey of the methods of science and the place of physical science in our modern world. The material covered is taken from astronomy, physics, chemistry and geology, with the emphasis on the unity of physical science as a field of knowledge. The aim of the course is to develop a scientific attitude of mind and to provide for the student a summary of man's knowledge about the world in which he lives.

SC 121-122. Biology. Credit, 6 semester hours. (SC 122 includes laboratory.)

This course consists of a study of the principles of biology and a survey of the major areas of study, including anatomy, physiology, genetics, evolution and taxonomy.
Laboratory and breakage fee: \$5.00.

Social Studies

SS 113. Sociology. Credit, 3 semester hours.

This course is a study of the role of culture in society; the person and personality; groups and group behavior; institutions; social interaction and social change.

SS 114. Problems in Sociology. Credit, 3 semester hours.

Prerequisite: SS 113.

From the principles covered in Sociology 113, the student studies the major problems which confront the present social order and the methods in practice and being considered for dealing with these problems.

SS 121-122. Political Science. Credit, 6 semester hours.

This course deals with the structure and functions of the national government, party organization, national and state relations, and American politics as compared to those of other countries and the trends in modern politics.

In the second semester state and local governments are studied.

SS 131. History of Western Civilization to the Renaissance. Credit, 3 semester hours.

This course is a general survey of western history from the ancient beginnings to the Renaissance, designed to give the student an appreciation of historical processes that have shaped our civilization.

SS 132. History of Western Civilization from the Renaissance. Credit, 3 semesters.

Beginning with the Renaissance, this course gives a general survey of history down to our own time. An emphasis is placed on those historical processes that have shaped our modern institutions and culture.

SS 214. Political Science. Credit, 3 semester hours.

This course deals with the structure and functions of the national government, party organization, national and state relations, and American politics as compared to those of other countries and trends in modern politics.

SS 215. Sociology. Credit, 3 semester hours.

In this course the student studies the role of culture in society; the person and personality; groups and group behavior; institutions; social interaction and social change.

NEW HAVEN COLLEGE

Faculty

New Haven College, 1961-1962

NEW HAVEN COLLEGE

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M.A., Trinity College
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M.A., Columbia University
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 Process Engineer, Pratt & Whitney Aircraft
- BOYD, ROGER W. *Engineering Drawing*
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